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GIVEN BY

Samuel Whitwell.

THE

MENAGERIES.

QUADRUPEDS,

DESCRIBED AND DRAWN FROM LIVING SUBJECTS.

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THE MENAGERIES.

Chapter. I.

INTRODUCTION.

Natural History has been called the science of observation, as distinguished from other sciences which are founded upon calculation or experiment. From this peculiarity, Natural History is, in many respects, the most easily pursued, and the most agreeable in the pursuit, of all the various branches of human inquiry and study. Its limits as a science are almost boundless; for scientific naturalists are daily adding some new or uncommon specimen to our previous collections of animal, vegetable, or mineral nature. At the same time, every detached object of this science—every quadruped, bird, reptile, fish, worm, or insect—every flower—every piece of metal, crystal, or stone—not only excites greater interest, when we have acquired, by careful investigation, a knowledge of its properties, but leads the mind forward to new subjects of curiosity. As an *observer of nature*, every man has it in his power to become a naturalist in a greater or less degree.

Although every one possesses this power, and has thus abundant opportunities of adding largely to his stock of intellectual enjoyment, there are many who pass through life without the slightest regard to those

wonders and beauties of the creation by which they are surrounded. It is the distinction between the savage and the civilized man that the one has no respect for the qualities of the living beings or inanimate substances among which he is placed, except as they minister to his physical wants ;—whilst the other, without neglecting their subservience to his necessities or comforts, views them likewise with reference to all the conditions of their existence—considering each variety of the whole world of Nature, whether separately or in groups, whether individually perfect or in parts, as affording the most striking illustrations of the extraordinary adaptation of every existing thing to the purposes for which it was created—the most complete proofs of the wisdom and goodness of the Creator. This distinction between the savage and the civilized man has been produced by habit and education. The savage has constantly to seek the precarious means of maintaining life ; for he has not learnt those useful arts, and those combinations of individual power, by which a supply of food and raiment is systematically provided for the necessities of society. Men advanced in civilization have the full advantages, first, of the division of labour, by which those whom habit has rendered expert are enabled to supply our necessary wants, for instance, of clothing ; and secondly, of mechanical power, by which many operations are rendered short and easy, which would otherwise be tedious and laborious. It is from these circumstances that we have all some leisure to acquire knowledge ; whilst the general stock of information which is possessed by society is insensibly diffused amongst all its members, and reaches even the minds of the most uncultivated.

It is thus the positive duty of all to acquire knowledge,—by observation, by reflection, by reading, by listening to the informed ; for the greater the portion

of the general stock of knowledge which each individual is enabled to acquire, the more is his own well-being promoted, and the more is society benefited. Knowledge is not limited in its quantity, and is not, in our times, of necessity confined to particular classes. Every one, however humble, may appropriate to himself some of its most valuable treasures; for its stores are always large enough for the supply of every demand, and the more they are drawn upon, the more inexhaustible appears to be the fund from which they are derived.

The first step in the successful communication of any branch of knowledge is to awaken the attention of the mind to the object, or assemblage of objects, to which that branch of knowledge applies. Without a habit of attention to the things around them, men walk about in the world with their eyes half shut; for they are insensible to all but the commonest external appearances, and have no perception of the minuter peculiarities which distinguish one class of objects from another, of the beauties of their structure, or of the harmonies of their arrangement. Take an example: engaged as we are in the ordinary pursuits of life, in our business and in our pleasures, it is but rarely that we bestow attention upon those most stupendous works of a ruling Providence—the sun, the planets, the myriads of stars,—of which it might be thought that the bare contemplation would awaken in us a feeling of unbounded wonder and admiration. It is only when some singular appearance of those vast and glorious bodies presents itself—when we behold an eclipse or a comet—that the greater number of us have our attention excited to the objects with which the science of Astronomy is conversant. It is at such moments that the accidental awakening of our attention should be seized upon by us, to acquire the particular knowledge relating to the circum-

stance by which the spirit of inquiry was roused; for we may reasonably entertain a conviction, that if we refer to some intelligent instructer, or seek for an explanation in some proper book, we shall not only satisfy ourselves upon the point in doubt, but be led forward to feel an interest in many other details which would lay the foundation of a scientific knowledge of the laws which govern the heavenly bodies. This would be to acquire the *habit* of bestowing attention upon a subject which we had previously disregarded; and we should find this habit a source of infinite amusement and instruction—not confined, as we might have thought, to those who survey the heavens from splendid observatories, and with the help of the most perfect glasses, but equally capable of affording delight and being of use to the wayfaring man who plods onward to his home, and to the labourer who rises to his work before the morning star has disappeared. There will be delight wherever there is this habit of observation. But the habit will not come if we do not cultivate the spirit of inquiry. We have heard a story of a pedagogue in a small village, who, having joined a crowd anxiously engaged in watching an eclipse of the sun, and, having been asked, in deference to his superior learning, what was the cause of this extraordinary appearance, replied, "Oh! it's only a phenomenon." If, when we behold any thing extraordinary in nature, we check our instinctive curiosity by saying to ourselves "It's only a phenomenon," we shall be not one step nearer any rational knowledge of that appearance than if we had never observed it. We must inquire into the *causes* of the phenomenon, which term, *phenomenon*, properly means an appearance—any thing made manifest to us in any way; and then we shall be led on to the knowledge of more phenomena,—till by degrees we obtain a con-

nected and general insight into the entire subject to which our attention was accidentally directed.

It is amazing how much quickness the habit of observation will impart to the whole intellect, and give it an aptitude for understanding and enjoying the thing observed. There is nothing, for instance, so common as to find men wanting in a perception of picturesque beauty—of that feeling which enables some to take great delight in a landscape, not only for its extent, or the grandeur of its parts, but for that harmonious arrangement which is necessary to the effect of a picture, or for some accidental circumstances of light and shadow, or of colour, which render the prospect more than usually attractive. Now this is strictly an acquired faculty, and one which is produced by the practice of looking at nature, or at the monuments of art, with this previous adaptation of the vision to picturesque objects ; and a person who enjoys the faculty, (we say enjoy, for it is a source of real pleasure,) is said to possess " a painter's eye." It is precisely in the same way that a naturalist, by constantly observing the peculiarities of animal life, acquires the readiest perception of the differences in the structure and habits of the great variety of living beings ; and he perceives in each of them qualities which a less practised observer would entirely overlook. Through this habit of observation, the science of *Zoology*, which comprehends all that relates to the description and classification of animals, has been gradually established. By diligent observation, the peculiar structure of vast numbers of individual animals has been ascertained ; their habits have been accurately described ; and many ancient errors, which arose from hasty examination, have been exploded. This greater accuracy of description has produced a proportionate accuracy of classification ; and though no system which attempts

to arrange every variety of individual animals according to generic distinctions can be perfect, because exceptions to the rule are constantly occurring, yet an approach to perfection has been made, through a more complete understanding of the organization of each species. Thus, in the more recent scientific works on Zoology, the accidental circumstances of size, or colour, or locality, or any identity in unimportant habits, have ceased to be guides in the classification of animals; but the essential peculiarities of their formation, which chiefly determine their habits, have alone been regarded. We mention this to point out that the actual observations of successive naturalists, leading to the accumulation of a great body of facts, have principally contributed to the advance of Zoology as a science in modern times; for the science being wholly founded upon observation, and not upon previous calculations, or any series of experiments, the greater our collection of facts, the nearer have we approached to systematic perfection.

To enable an observer to make any valuable additions to this store of zoological knowledge, it is not necessary that he should be a profound anatomist, or skilful in languages, or acquainted with all the various systems of classification which have entered, perhaps too largely, into the science of Zoology in all ages. Some of the most valuable materials for our knowledge of animals have been contributed by unscientific travellers, who have been content accurately to describe what they saw, and to collect the minutest particulars of the structure, and more especially of the habits, of the rare species of quadrupeds, or birds, or reptiles, or fishes, which they had opportunities of seeing in their natural state. But it is not even necessary that a lover of nature should be a traveller, or detail the peculiarities of those creatures only with which we are not familiar,

to make very important additions to Zoology. One of the most instructive and amusing books in our language, "The Natural History of Selborne," was written by the Rev. Gilbert White, who for forty years scarcely stirred from the seclusion of his native village, employing his time, most innocently and happily for himself, and most instructively for the world, in the observation and description of the domestic animals, the birds, and the insects by which he was surrounded. He does not raise our wonder by stories of the crafty tiger or the sagacious elephant; but he notes down the movements of "the old family tortoise;" is not indifferent to the reason "why wagtails run round cows when feeding in moist pastures;" and watches the congregating and disappearance of swallows with an industry which could alone determine the long disputed question of their migration. Mr. White derived great pleasure from these pursuits, because they opened to his mind new fields of inquiry, and led him to perceive that what appears accidental in the habits of the animal world, is the result of some unerring instinct, or some singular exercise of the perceptive powers, affording the most striking objects of contemplation to a philosophic mind. It is in this way that every man may become a naturalist; and the great object which we propose to ourselves in the collection of the most interesting facts relating to animals in general, and in this volume of those which appertain to Quadrupeds in particular, will be to excite such a habit of observation in our readers, that they may accustom themselves to watch the commonest appearances of animal life; and thus derive from every inquiry to which their observations may lead them, a more intimate conviction of the perfection of that Wisdom, by which the functions of the humblest being in the scale of existence are prescribed by an undeviating law.

We intend, at first, to treat of QUADRUPEDS ; and, with very few exceptions, to found our description of the individual animal, upon our personal observation of living specimens. We shall, in most cases, illustrate these descriptions by accurate wood-cuts, not copied from other books, but taken from the life by competent artists. The principal subjects of our descriptions and drawings are to be found in the Menageries of London and its neighbourhood. We shall especially direct our attention to the Collection in the Garden of the Zoological Society, which already contains many interesting specimens, and which may be justly regarded as the foundation of a National Vivarium,—for so such a collection was called by the Romans. It may be objected to this mode of writing a book on Quadrupeds, that the individual animals are seen under artificial restraints, and that, in circumstances so opposed to their ordinary states of existence, we can form no adequate notion of their natural habits. To this we reply, that the observation of Quadrupeds in Menageries is the only mode by which a sufficient number can be viewed alive at one time. That man must be a very universal traveller who has seen, in their native condition, the elephant of India, the llama of Peru, the beaver of North America, the lion of Africa, and the kangaroo of New South Wales. In Menageries we can trace the forms, the colours, and, partially, the natural habits of animals;—and we can witness, what the observer of them in their native woods and mountains has no opportunity of witnessing, the interesting modifications of their habits under restraint and discipline, or their changes of character in their association with civilized man. But in the almost exhaustless details of travellers, and particularly in the relations of those enterprising naturalists, both of our own and other coun-

tries, who have enlarged the boundaries of natural science by the most enthusiastic devotion to their favourite pursuits, we have the means of comparing the same species in different circumstances, and thus of connecting our own impressions with the facts derived from a more extended observation. We avail ourselves, in common with the other inhabitants of a great metropolis, of the instruction which Menageries afford ;—and we view these establishments, not as mere exhibitions for the gratification of a passing curiosity, but as the most effectual means of bringing to our very doors, those uncommon specimens of the animals of other climes, which, while they extend, as far as possible, our actual acquaintance with animal nature, may ultimately lead to the domestication of some of those races which, possessing many valuable qualities, have not yet been made available to the purposes of man even in his present state of civilization.

We propose to proceed in our descriptions of individual animals, without following exclusively an arrangement depending upon what zoologists call the *Order*, the *Family*, or the *Genus*, to which they belong. We are not about to write a systematic work on Zoology, which shall comprise every specimen of the Animal Kingdom ; but with especial reference to the plan of diffusing *Entertaining* Knowledge, we shall rather attempt to lead the reader to a gradual acquaintance with the Science, by instructing him in the peculiarities of individual animals, than to make these peculiarities subordinate to classification. We apprehend that, in adopting this course, we pursue a natural and interesting mode of communicating a popular knowledge of the subject. It is frequently better to lead men from the example to the principle, than from the abstract principle to the example. This is the mode in which a *practical* knowledge is

best attained, in all things. A naturalist, when he first begins to form a museum, collects whatever rare and valuable specimen may fall in his way. He partially arranges them, as far as may be convenient; and he is thus led on to attempt a *perfect* classification, when his collection is sufficiently advanced to render the want of such an arrangement embarrassing. In the same way, when our readers are familiarized with the individual characters of a considerable number of animals, (in the selection of which we shall neither utterly disregard, nor slavishly follow, a scientific order,) they will begin to feel the *real* value of classification: and thus, whilst their amusement has been consulted by keeping back the mere nomenclature of Science, in the first instance, a complete analytical index upon scientific principles will ultimately collect all our scattered specimens into *Orders* and *Genera*; and this will be done at the very time when a knowledge of the Classification of Zoology will become with them an object of anxious desire, instead of appearing dry and technical, and fit only for anatomical students and lovers of hard names.

There are, however, a few of the great principles of Zoology, upon which the systems of classification now in most esteem are founded, which we may properly explain, in as brief and simple a manner as possible, before we proceed to individual descriptions.

The Animal Kingdom (scientifically called *kingdom*, to distinguish it as a portion of the *world* of nature in general) is divided into *vertebrated* and *invertebrated* animals. The term vertebrated is derived from *vertebræ*, the Latin name for the bones of the spine.

Vertebrated animals are, therefore, those which possess a spine, or bony covering of the spinal mar-

row, on the anterior part of which the cranium or covering of the brain rests. To the sides of the vertebræ are attached ribs, which form the frame-work of the body. Animals of this division have all red blood; a muscular heart; a mouth with a transverse opening, and of which the jaws move in the same plane; and distinct organs of vision, smell, hearing, and taste, all situated in cavities of the head. They have never more than four limbs. The division comprises, Mammalia, Birds, Reptiles, and Fishes. The word *Mammalia* (having teats) applies to all animals which suckle their young, and is the proper scientific term for those which are popularly called *Quadrupeds;* for the latter term is an incorrect one, when applied *exclusively* to viviparous animals (producing their young in a living state) with four legs, as many of the Reptiles have also four legs. Whenever, therefore, we popularly use the term Quadrupeds, speaking generally of the class which we are at present about to describe, we mean *Mammiferous Quadrupeds.*

The Invertebrated animals are those which have no vertebræ; of all these the blood is white. They are scientifically divided into *Molluscous* animals, in which the muscles are attached to the skin, with or without the protection of a shell—such as snails and slugs; *Articulated* animals, in which the covering of the body is divided into rings or segments, to the interior of which the muscles are attached—comprehending all insects and worms; and *Radiated* animals, in which the organs of motion or sensation radiate from a common centre—such as star-fish.

Each of the above four classes of Vertebrated animals have peculiarities of organization, by which they are fitted for the respective states in which they exist. The various nature of their movements is always proportioned to the quantity of respiration distinguishing each class. They thus either

walk or run upon the earth, or fly through the air, or creep upon the ground, or swim in the water, as their quantity of respiration is moderate as in quadrupeds, or great as in birds, or feeble as in reptiles, or small, but modified by peculiar arrangements, as in fishes. Quadrupeds, as we before said, suckle their young, and are viviparous. The whale, and several other species, which are popularly regarded as fishes, belong to the class Mammalia, on account of the great characteristic of suckling their young. Birds, Reptiles, and Fishes, being oviparous, or laying eggs, leave their young to other nourishment than that of their own bodies.

The peculiar organization of QUADRUPEDS will be described, as occasion offers, in our notice of the individual specimens. The Orders into which they are now more generally divided are determined, first, by the organ of touch, which regulates the ability of the animal to seize upon any object, and upon which its dexterity mainly depends ; and, secondly, by those of mastication, which prescribe the nature of the food proper to each species. Linnæus, whose authority as a writer on Natural History was for a long time considered unquestionable, divided the orders of quadrupeds solely according to the peculiarities of their teeth ; but this system, although natural to a certain extent, has been considered as producing great anomalies, and unnatural combinations. The systems of Cuvier, Blumenbach, and other distinguished naturalists of our own day, are founded upon a consideration of the peculiarities both of the teeth and of the organs of touch. These systems, therefore, being formed with especial reference to the two great distinctions which determine the most important habits of the animal, are called 'natural systems.' Without offering an opinion upon the relative merits of the more modern systems of classification, we subjoin, for the present, a general

view of the principles which have guided the zoologists of the best authority.

The class of Quadrupeds admits of a division into two *tribes* :—

I. Those whose extremities are divided into fingers or toes, scientifically called *Unguiculata*, from the Latin word for nail.

II. Those whose extremities are hoofed, scientifically called *Ungulata*, from the Latin word for hoof.

I. The extremities of the first tribe are armed with claws or nails, which give them a capability of grasping objects, of climbing, of burrowing. The animals thus distinguished are susceptible of great variations in their modes of subsistence ; which variations are partly determined by different modifications of the power of touch, and partly by differences in the form of the cheek-teeth.

Some have extremities formed for grasping, having the faculty of opposing a thumb to the other fingers, which faculty resides in, or is communicated by, that portion of animal structure which is properly called a hand. Man possesses this faculty in the highest perfection ; but monkeys and bats are distinguished by having *all* their extremities capable of this power ; and they are thus called *Quadrumana*, or four-handed.

The remaining orders of the first tribe have no thumb capable of free motion ; and they are classed according to the form of their cheek-teeth, which determines their choice of food.

The *Quadrumana*, and the *Carnivora*, (eaters of flesh,) have molar or grinding-teeth, (which we call cheek-teeth,) canine-teeth, and cutting-teeth. Those

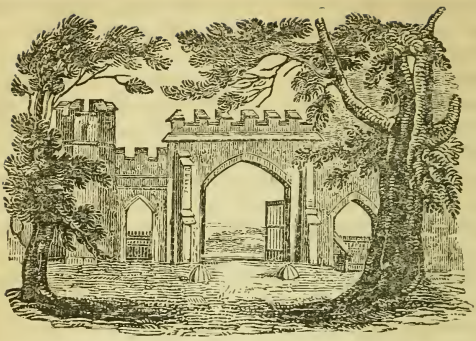
which have the cheek-teeth feed partly, or wholly, on flesh, and these teeth are adapted for cutting that substance ; while the jaws are fitted together so as to move in the manner of a pair of scissors, and are incapable of any other motion than that of opening and closing again in a vertical direction. Some of these carnivorous animals, as well as other orders of the fingered quadrupeds, walk on the soles of the feet, as bears, and are called *Plantigrada ;* some on the extremities of the feet, as cats, and are called *Digitigrada ;* and some are web-footed, as seals, and are called *Palmata.* The remaining animals of the first tribe want the canine-teeth, and have cutting-teeth in the front of the mouth, as rats and rabbits. They are called *Rodentia* by Cuvier, which signifies *gnawing ;* and *Glires* by Linnæus. Cuvier makes another division, called *Edentata*, which are defective in the incisive teeth, and of which some want the canine-teeth, and some are even destitute of teeth altogether.

Amongst the Unguiculata, or fingered Quadrupeds, there are very few which are used by man as food. Many of them are noxious or ferocious. The Dog and the Cat are the only species of the carnivorous orders which have been rendered domestic ; although many have their natural instincts subdued or restrained by their contact with mankind.

II. The extremities of the Ungulata (*Hoofed* tribe) are exclusively employed to support and move the body. These animals do not possess the power of grasping objects, of climbing, or burrowing. They are all *Herbivorous*, or feeding on vegetables. Their teeth are fitted for the mastication of grain or roots, by having a flattish round upper surface ; and their jaws possess the capacity of moving in the same plane. Their teeth are also of unequal hardness, so that they have the power of crushing, like the unequal surfaces

of a millstone. Cuvier divides the Hoofed animals into, 1. *Pachydermata*, or thick-skinned, amongst which are the horse and the elephant; and, 2. *Ruminantia*, or those which ruminate, or chew the cud, such as cows and sheep. Amongst this tribe, man, whether in a rude or a civilized state, principally and almost exclusively finds his food, from wild or from domesticated animals. This tribe also furnishes him with the most valuable assistance in agriculture, in the chase, and in the carriage of commodities.

In giving this very brief, and therefore imperfect, sketch of the leading principles of Classification, we have only thrown out a few hints for such of our readers as may desire, in the outset, to view the subject of Zoology as a science. As we proceed, we shall endeavour not to disregard the claims of Classification; in not making them prominent, we desire only to divest the subject of such technicalities as might interfere with the object of combining *entertainment* with instruction: and we shall seek to afford materials for adopting the best of the prevailing systems, rather than undertake to pronounce without hesitation upon the superiority of any one of them.



Entrance to the King's Menagerie, Sand-Pit Gate, near Windsor.

Chapter II.

THE USES OF MENAGERIES.

The literal meaning of the word Menagerie points out one of the principal objects of a collection of various living animals. *Ménagerie* is derived from the French word *ménager*, from which we derive our English verb, to manage. The name *Ménagerie* was originally applied to a place for domestic animals, with reference to their nurture and training: it now means any collection of animals. It may be implied, therefore, that the animals in a Menagerie are not placed there merely for safe confinement, but that by care and kindness their noxious or ferocious propensities may there be restrained or subdued, and by constant discipline their habits may there be rendered useful, or at least inoffensive, to man. Daubenton, and other distinguished naturalists, have believed that the ferocity of many of the carnivorous animals may be entirely conquered, in the course of

time ; that they only flee from man through fear, and attack and devour other animals through the pressing calls of hunger ; and that the association with human beings, and an abundant supply of food, would render even the lion, the tiger, and the wolf, as *manageable* as our domestic animals. In support of this theory, it may be observed, that although the tiger and the domestic cat have many properties in common, the conquest of the latter species is now complete ; and, further, that some of the most ferocious animals which have been bred in a state of confinement, or taken exceedingly young, have become perfectly tractable and harmless with those who have rightly understood their natures. The accidents which have sometimes occurred to the attendants of wild beasts, and which are attributed to the treachery of their dispositions, have generally proceeded from an ignorance of their habits. The lion, for instance, is not an animal of acute hearing, and he is therefore awakened with difficulty, particularly after feeding. If he be suddenly aroused, he instantly loses all presence of mind, and flies off in the direction in which he happens to be lying. A few years ago, one of the keepers at Exeter Change was killed, through his ignorance of this peculiarity, which is well known to the Bushmen of Africa.* The keeper, going into the den of a lion, and suddenly awakening him, the animal, seeing no mode of escape, killed the man under the influence of his natural terror. This unfortunate circumstance did not proceed from any unconquerable ferocity in the lion ; for, in general, he was obedient, and even affectionate. The habits of his species were not thoroughly understood by those around him ; if it had been otherwise, the keeper would not

* Philip's Researches in South Africa.

have placed himself in a position where the discipline by which the lion had been rendered grateful would be useless, from the stronger force of a natural propensity.

But if it be too much to hope that the ferocious animals may be subdued to our uses, through the education which well conducted Menageries would afford, it cannot be doubted that such establishments offer most interesting opportunities for observing the peculiarities of a great variety of creatures, whose instincts are calculated to excite a rational curiosity, and to fill the mind with that pure and delightful knowledge which is to be acquired in every department of the study of nature. The commonest animals offer to the attentive observer objects of the deepest interest. When Montaigne, playing with his cat, says, in his quaint way, "who knows whether puss is not more diverted with me than I am with puss," his mind wanders into those speculations with regard to the delicate lines which divide instinct from reason, which must naturally arise to every one who attentively contemplates the dispositions of the inferior parts of the living creation. To those who philosophize, or to those who do not, the instinct and intelligence of animals are always interesting ; and to a feeling mind, they are doubly so. The poet Cowper, when he sat for hours in his study watching the gambols of his three tame hares, forgot that gloom which constitutionally preyed upon him, in his sympathy with the innocent happiness of the poor beings whom he had taught, first not to fear him, and afterwards to love him. These three hares, and his spaniel and cat, formed Cowper's Menagerie, and it afforded him both delight and instruction.

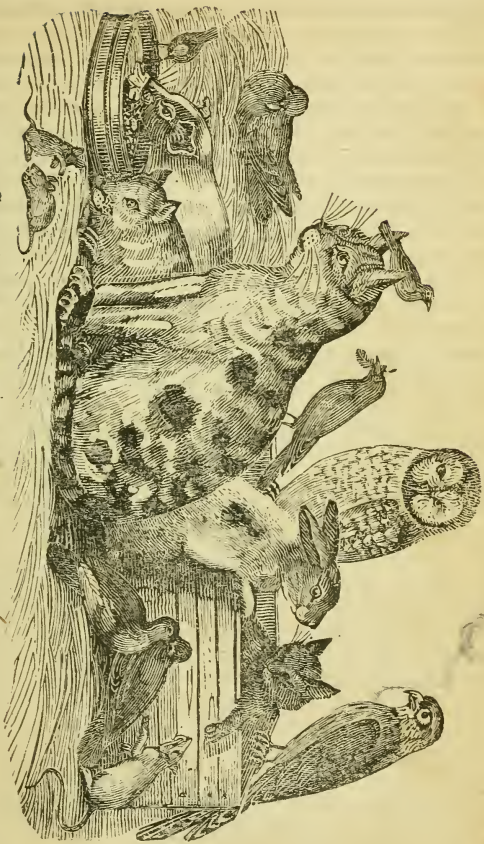
All associations between animals of opposite natures are exceedingly interesting ; and those who train animals for public exhibition know how attractive are

such displays of the power of discipline over the strength of instinct. These extraordinary arrangements are sometimes the effect of accident, and sometimes of the greater force of one instinct over the lesser force of another. A rat-catcher having caught a brood of young rats alive gave them to his cat, who had just had her kittens taken from her to be drowned. A few days afterwards, he was surprised to find the rats in the place of the drowned kittens, being suckled by their natural enemy. The cat had a hatred to rats, but she spared these young rats to afford her the relief which she required as a mother. The rat-catcher exhibited the cat and her nurslings to considerable advantage.* A somewhat similar exhibition exists at present. There is a little Menagerie in London where such odd associations may be witnessed upon a more extensive scale, and more systematically conducted, than in any other collection of animals with which we are acquainted. Upon the Surrey side of Waterloo Bridge, or sometimes, though not so often, on the same side of Southwark Bridge, may be daily seen a cage about five feet square, containing the quadrupeds and birds which are represented in the annexed cut. The keeper of this collection, John Austin, states that he has employed seventeen years in this business of training creatures of opposite natures to live together in content and affection. And those years have not been unprofitably employed ! It is not too much to believe, that many a person who has given his halfpenny to look upon this show, may have had his mind awakened to the extraordinary effects of habit and of gentle discipline, when he has thus seen the cat, the rat, the mouse, the hawk, the rabbit, the guinea-pig, the owl, the pigeon, the starling, and

* Broderip.

the sparrow, each enjoying, as far as can be enjoyed in confinement, its respective modes of life, in the company of the others,—the weak without fear, and the strong without the desire to injure. It is impossible to imagine any prettier exhibition of kindness than is here shown. The rabbit and the pigeon playfully contending for a lock of hay to make up their nests; the sparrow sometimes perched on the head of the cat, and sometimes on that of the owl,—each its natural enemy; and the mice playing about with perfect indifference to the presence either of cat, or hawk, or owl. The modes by which this man has effected this, are, first, by keeping all the creatures well fed; and, secondly, by accustoming one species to the society of the other at a very early period of their lives. The ferocious instincts of those who prey on the weaker are never called into action; their nature is subdued to a systematic gentleness; the circumstances by which they are surrounded are favourable to the cultivation of their kindlier dispositions; all their desires and pleasures are bounded by their little cage; and though the old cat sometimes takes a stately walk on the parapet of the bridge, he duly returns to his companions, with whom he has so long been happy, without at all thinking that he was born to devour any of them. This is an example, and a powerful one, of what may be accomplished by a proper education, which rightly estimates the force of habit, and confirms, by judicious management, that habit which is most desirable to be made a rule of conduct. The principle is the same, whether it be applied to children or to brutes.

The travelling menageries, which form the chief attraction of country fairs, and which divide the popular applause with tumblers and conjurers, are



Group of Animals of opposite natures living in the same Cage.

amongst the most rational gratifications of the curiosity of the multitude. All classes of persons go to see these exhibitions ; and it is not too much to assert that many come away with their understandings enlarged, and their stores of useful knowledge increased. The animals may be confined in miserable dens, where their natural movements are painfully restrained ; the keepers may be lamentably ignorant, and impose upon the credulous a great number of false stories, full of wonderment and absurdity : but still the people see the real things about which they have heard and read, (though they are not always pointed out to them by their right names,) and they thus acquire a body of facts which make a striking impression upon their memories and understandings. The sagacity of the elephant, and the lofty port of the lion, can never be forgotten. The actual inspection of such collections of animals, too, gradually obliterates the impressions of these false accounts which the early naturalists multiplied with a fond credulity, and which, like all other mysterious stories, took the firmest hold of the popular mind. The people see in these menageries a great number of rare animals, brought together from distant parts of the earth, whose habits are very curious and surprising : but they never see the Griffin, which is represented as half beast and half bird ; nor the Centaur, which the poets have described as half horse and half man ; nor the Phœnix, which is drawn as a bird, and is stated to perish by fire at the end of a hundred years, and then to rise again from its own ashes. The people thus gradually learn to disbelieve the existence of these things, because the fables to which they have trusted never receive a confirmation from any living specimen ; whilst, on the other hand, the statements of intelligent travellers and naturalists, which they may have also heard of, are abundantly proved by the evidence of their own senses

To acquire the habit of discriminating between what is true and what is false—to learn to separate fable from fact—to perceive what parts of literature belong to the freaks of the imagination, and what to diligent inquiry and sober reasoning—this is the very foundation of all valuable knowledge ; and to obtain this habit of mind is one of the happiest consequences of that habit of observation which, as we have already said, a love for the study of nature is so fitted to call forth.

The commercial intercourse of this country with what may be almost called the whole world, has afforded us, during the last century, unrivalled opportunities of obtaining the rarest specimens of animals, from whatever region they are naturally found in. Our immense possessions in Asia, and our systematic expeditions of discovery to Africa, have furnished the most extensive fields for the researches of naturalists. Within the last thirty years especially, our extended colonization of Australasia has added many new specimens to our national collections ; but, till very lately, the acquisition of rare animals has been entirely left to individual enterprise. A tiger or a bear, for instance, has been caught young, and entrusted as a speculation to the captain of a merchant vessel, to be brought to England. The proprietor of the valuable collection at Exeter Change, or some one of the owners of the three or four travelling menageries in the kingdom, bought the animal at a large price, if it suited his purpose ; and by such means, as we have seen, a popular knowledge of this branch of Natural History has been imperfectly kept up. The spirit of commercial speculation has thus, as in many other matters amongst us, supplied the place, and sometimes very admirably, of a fostering care on the part of the Government. It might be considered that the Royal

Menagerie in the Tower of London was an exception to this remark ; but that collection has always fluctuated in value according to the spirit of the individual entrusted with its management, which spirit has mainly depended upon the taste of the public for such exhibitions.

The Menagerie of the Tower is now very flourishing. It contains some extremely fine specimens of more than forty quadrupeds, and of various birds and reptiles. The dens in which the animals are kept are tolerably commodious, and great attention is paid to their cleanliness. This collection has lately been made the subject of a very interesting volume. But the Tower Menagerie was not always as valuable as at the present time. In 1822, the collection comprised only an elephant, a bear, and two or three birds. It had gradually declined in value for half a century ; in some degree, perhaps, from the force of popular prejudice, which was accustomed to consider it only an occupation and amusement for children to make a visit to the " Lions in the Tower." A better system of education has instructed us that there is nothing in nature beneath the attention of a reasonable being ; that some of the wisest and most philosophic of mankind have devoted themselves with a passionate ardour to the cultivation of Natural History as a science ; and that if children feel the deepest interest in safely beholding those ferocious animals which form such attractive objects in many of the stories dedicated to their use, that interest may be readily carried far beyond the gratification of a passing curiosity, and may become the excitement to the acquisition of a great deal of real knowledge, capable of being presented in the most captivating form

In the barbarous ages, and till within the last century, beasts of prey were considered the especial

property of kings, as something typical of their power and greatness. In the fortress where the crown of our ancient monarchs was kept, were also confined their lions. These were generally maintained at the expense of the people, and sometimes of the civic officers of London, by special writ; and the keeper of the lions was a person of rank attached to the court. Gradually, this exertion of the royal prerogative fell into decay; and if a foreign potentate presented a tiger or a leopard to the King, as was often the case with the rulers of the maritime states of Africa, the animal was given to the keeper of the menagerie to add to his stock of attractions for the public. Further, no care was taken of the collection on the part of the Sovereign or the Government. It is highly creditable to the present keeper that he has judiciously availed himself of the growing taste for zoological pursuits, to render his collection in some degree worthy of a country possessing such opportunities of obtaining the finest specimens of animal life which the world can afford.

The beasts of prey which are presented to the King are, in nearly every case, sent to the Tower; but his present Majesty, during the last ten years, has formed a very fine collection of such quadrupeds as are more capable of domestication, and of birds, in Windsor Great Park, at a Lodge called Sand-Pit Gate.* Before the establishment of the gardens of the Zoological Society, this royal collection offered almost the only opportunity of seeing many of the rarer species of animals in their natural condition.

* The King's Collection is open on Mondays and Saturdays to all persons making application at the Sand-Pit Gate Lodge, which is situated about twenty-two miles from London, close by the road called the Forest Road to Reading. The Vignette at the head of this chapter will be some guide to the stranger in finding the spot.

In this menagerie they are not pent up in miserable dens, but have large open sheds, with spacious paddocks, to range in; water in plenty; and spreading trees to shade them from the noon-day sun. The collection is open to the public gratuitously; and here may be seen the giraffe, various species of antelopes and deer, kangaroos in great numbers, zebras, quaggas, ostriches, and emeus rearing their young as fearless as the barn-door fowl. The Duke of Devonshire has, at his villa at Chiswick, a small collection, which, as in the instance of the Windsor Park Menagerie, offers the delightful exhibition of several quadrupeds and birds exercising their natural habits almost without restraint. At Chiswick, there was, for many years, a particularly sagacious female elephant, which followed her keeper about the field in which her spacious hut was placed, knelt down at his bidding, and bore him on her neck in the manner which we read of in books of oriental history or travel. This interesting animal died last autumn. (1828.)

Whatever advantages students of natural history, artists, and the public generally, may have derived from private collections, and from the imperfect exhibitions to which we have alluded, it was manifestly desirable that a National Menagerie and Museum should be established in London. The greater the opportunities of forming such collections, the greater the disgrace of neglecting them. In this country, such national institutions are generally formed by the spirit of individuals associating together for the advancement of some great public good; and it is thus that other countries, with whose governments establishments connected with science generally originate, have commonly preceded us in the career of scientific improvement. We do the work as well ultimately, but we go about it more slowly. The Kings of France had, at Versailles, such a me-

nagerie as the Kings of England have had in the Tower. It was at this menagerie that Buffon and Daubenton studied. In 1793 the collection was so reduced that it consisted only of a quagga, a bubale, (the cervine of Pennant,) a rhinoceros, a lion, and a hooded pigeon. The celebrated St. Pierre, who succeeded Buffon as keeper of the Jardin des Plantes, where there was a splendid *museum* of natural history, laboured most assiduously to add a menagerie to the establishment. He succeeded; and the collection was begun with the remnant of the royal collection at Versailles. The menagerie of Paris is now one of the principal attractions of that capital. In the number of its specimens, in the convenience of its arrangements, and in the large scale of its accommodation for the animals according to their respective natures, it is infinitely superior to any other menagerie, and is therefore deservedly visited by all foreigners. St. Pierre, amongst the arguments which he employed for the formation of this establishment, says, "Colbert attracted many strangers to our capital by the fêtes which he gave to Lewis XIV.; a free nation ought to invite them thither by the schools of useful knowledge which it opens to the human race." His arguments were successful. What was begun at Paris in 1793, for the study of natural history from living specimens, has been imitated in London in 1828; and we doubt not that our own institution will be as successful as its precursor. The one is maintained at the public cost, the other by individual subscription; but the popular desire for knowledge will, we trust, overcome this inequality.

The establishment of the *ménagerie* at the Jardin des Plantes has afforded opportunities for the study of natural history which have advanced the branch of the science that relates to quadrupeds in a most

remarkable degree. The accurate descriptions of Cuvier, of Geoffroy, of Desmarest, and of other distinguished naturalists of France, are principally to be ascribed to their diligent studies in this school. Buffon was one of the most eloquent of natural historians. Wherever he describes from actual observation, the appearance, the instincts, and the habits of animals, he is interesting not only to the learned, but to the least informed reader. The greater part of what is really valuable in his writings is derived from the accurate study of some individual specimen ; and his most splendidly coloured portraits are those for which he had living models. But such opportunities of gathering materials for fresh and vivid description, from real animated nature, were oftentimes wanting to Buffon. He occasionally writes from vague and uncertain narratives ; and then, as might be expected, he is superficial and full of false theories. His successors have had more extended opportunities of observation ; and the accuracy of their facts, therefore, leaves us less reason to regret the absence of those charms of style which render Buffon one of the most delightful of writers.

The five animals which remained of the menagerie of Versailles were offered to St. Pierre, as keeper of the *Cabinet* of Natural History, to form *skeletons* to be added to that collection. He wisely seized upon the opportunity to combat a prejudice which then existed, and which even still exists, that stuffed specimens, and anatomical preparations, are quite as valuable for the purposes of science as living animals. Comparative anatomy, which is doubtless an important part of natural science, may certainly be studied in museums ; but when the argument is carried further by those naturalists who say, " It is sufficient to have the means of examining *dead* animals, for by such we may learn to distinguish the species

and the kinds of each, as well as from living specimens," the indignant answer of St. Pierre is worthy attention :*

"Those who have studied nature only in books can see only their books in nature ; they look upon the natural world only to find therein the names and the characters of their systems. If they are botanists, they are satisfied to have discovered a plant of which some author has spoken ; and having assigned it to the class and the order which he has pointed out, they gather it, and spreading it between two bits of gray paper, they sit down content with their knowledge and their researches. They do not form a herbal to study nature, but they study nature to form a herbal. It is in the same way that they make collections of animals, that they may learn their genera and their species, and treasure up their names.

"But can he be a lover of nature who thus studies her wonderful works ? How great a difference is there between a dead vegetable, dry, faded, discoloured, whose stems and leaves and flowers are crumbling to powder, and a living vegetable, full of sap, which buds, flowers, gives forth perfume, fructifies, and sows itself again—maintains an universal harmony with the elements, with insects, with birds, with quadrupeds, and, combining with a thousand other vegetables, crowns our hills and adorns our river banks !

"Can we recognise the verdure and the flowers of a meadow in a hay-stack ? or the majesty of the trees of a forest in a bundle of faggots ? The animal loses by death even more of its characteristics than the vegetable : for the animal has received a more vigorous portion of life. Its principal qualities vanish :

* Mémoire sur la Ménagerie. Œuvres de St. Pierre, tom. xii. p. 654. Paris, 1818.

its eyes are shut, its pupils are dim, its limbs are stiff; it is without warmth, without motion, without feeling, without voice, without instinct. What a difference between the animal who enjoys the light, distinguishes objects, moves towards them, calls the female, couples, makes its nest or lair, brings up its young, defends them from their enemies, congregates with its kind, and gives music to our woods and animation to our meadows! Do you recognize the lark, gay as the breath of morning, who 'at heaven's gate sings,' when he is suspended from the beak upon a bit of packthread; or the bleating sheep and the labouring ox in the well-dressed limbs of a butcher's shop? The best prepared animal only offers a stuffed skin and a skeleton. The life is wanting, by which he was classed in the animal kingdom. The stuffed wolf may preserve his teeth, but the peculiar instinct which determined his ferocious character is gone, and he then scarcely differs from the friendly dog."

There is much truth in these remarks, and their good sense ought not to be overlooked, though the style in which it is conveyed be somewhat declamatory. For all popular purposes, menageries offer much more interesting modes of studying some parts, and those the most important, of the animal kingdom, than the best museum. In this sense, the homely saying is quite correct, that "a living dog is better than a dead lion."

The value of menageries, not only for popular but for scientific study, depends, however, very much upon the arrangements which determine their construction and regulation. The great object should be, as far as possible, to exhibit the animals in their natural state. It has been a favourite plan with many naturalists to establish a garden, in which the animal should find himself surrounded by his

natural food—where the beaver should live amidst a rivulet and a bank of poplars, and the rein-deer browse upon his native lichen. Great difficulties, of course, present themselves to the completion of such a project; and though its execution were compatible with any reasonable expense, the difficulty of adjusting the temperature of our climate to the plant and the animal would be very considerable. Yet, in a *national* menagerie, much ought to be attempted, gradually but systematically, to realize such a desirable object as the exhibition of animals in their natural habits. If the cat tribe are pent up in close dens, what idea can be formed of the crouch and the spring which characterise both their sport and their seizure of prey? With every regard to their security, they might have a sufficient range to exhibit this peculiar property. We can acquire no adequate notion of the kangaroo in a cage, but in a paddock its remarkable bound at once fixes our attention and curiosity. In a very interesting book, "Waterton's Wanderings in South America," there is an account of the sloth, which shews that we can know nothing of some animals unless we see them in their natural condition. This traveller delights in wonderful stories, which he tells in a style approaching to exaggeration; but there is no reason to doubt the general accuracy of his descriptions of natural objects. The sloth is usually described as slow in his movements, and as in a perpetual state of pain; and from his supposed inaction his name is derived. And why is this? He had not been seen in his native woods by those who described him: he was resting upon the floor of some place of confinement. His feet are not formed for walking on the ground; they cannot act in a perpendicular direction; and his sharp and long claws are curved. He can only move on the ground by pulling himself

along by some inequalities on the surface, and therefore on a smooth floor he is perfectly wretched. He is intended to pass his life in trees; he does not move or rest *upon* the branches, but *under* them; he is constantly suspended by his fore-legs, and he thus travels from branch to branch, eating his way, and sleeping when he is satisfied. To put such a creature in a den is to torture him, and to give false notions of his habits. If the sloth be placed in a menagerie, he should have a tree for his abode; and then we should find that he is neither habitually indolent nor constantly suffering.

The delight of observing wild animals in their natural state is great in proportion to its rarity. This delight is one reason that enterprising travellers,—such as Waterton, whom crocodiles and serpents could not deter from pursuing his researches, and as Wilson, the historian of American birds, who spent his life in the woods,—describe with a freshness and truth which can only proceed from a thorough love of their subject. We can understand how this desire to observe the natural, unrestrained habits of animal life, should grow almost into a passion. The difference between the same animal under confinement, and when enjoying its native liberty, is striking enough to make an enthusiastic man willing to devote his life to those diligent observations of "the free denizens of the woods," which are so valuable to those who have to write on natural history with less favourable means of observation. We lately saw this difference exemplified in a striking manner. At the residence of a private gentleman at Limehouse, there are three monkeys in a state of remarkable freedom. We went to see them, with but few anticipations of pleasure; for a monkey, as monkeys are ordinarily seen, confined to a box, shews little but the cunning and rapacity of his race.

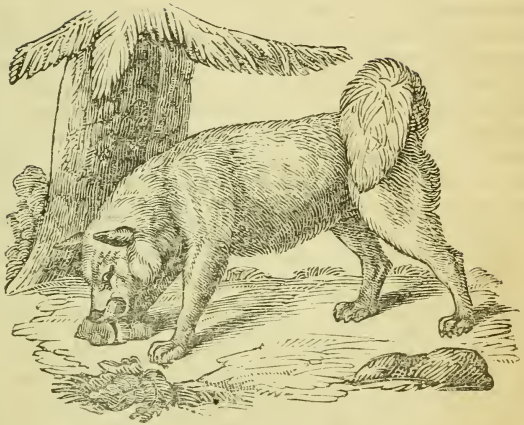
The monkeys at Limehouse were let loose into an orchard, in which there were some high and spreading elms. Their gambols were the most diverting that could be imagined. They pursued each other to the top of the highest branch, where they sat fearlessly chattering ; and in an instant they would throw themselves down, with unerring aim, some twenty feet, and, resting upon the bough which they had selected to leap at, would swing to and fro with manifest delight. We shall not be satisfied again with a menagerie which has not trees for its monkeys to sport in.

The menagerie of the Zoological Society will doubtless become the national menagerie, and in the course of a few years it may rival that of Paris. Our opportunities for forming the finest collection in the world are unbounded ; and the taste for natural history which distinguishes the public mind, in itself will create ample funds for its gratification. It will be the object of this little book to promote that taste, by giving faithful descriptions of living animals, by rejecting all fabulous and doubtful relations, and by leading onwards to a more scientific knowledge, through the medium of what appears to combine the entertaining with the useful. We first desire to fix the habit of attention upon natural objects. To effect this, we shall attempt to present some of those objects to the mind in a way that may excite a rational curiosity towards what is rare and wonderful,—never forgetting to direct it, at the same time, towards what is familiar, but not less remarkable. Everything in nature is full of instruction. The intelligence of the elephant, and the instinct of the spider, are equally deserving of observation and inquiry ; and are equally examples of the wisdom and power of Him who said "Let the earth bring forth the living creature after his kind, cattle and creeping thing

and beast of the earth after his kind." It is for this cause, especially, that we consider that attention can never be ill bestowed, whether it be directed to the habits of our humble companions, such as the dog and the horse, or excited by the rarities of foreign lands, as viewed in menageries. In such establishments there are various measures of attraction, as we have already seen ; but there are none without some interest. Even the wandering Italian, who exhibits his bird and his dog to every bystander, has something to shew which may exemplify the force of instinct or of habit, and thus teach us some one of the lessons which the whole Book of Nature offers to him who will read it aright.

Chapter III.

THE DOG.



Esquimaux Dog.—Canis familiaris Borealis.—Desmarest.

In the garden of the Zoological Society are some remarkably fine specimens of dogs ; and one of the finest and most interesting is the dog of the Esquimaux. Peter (so he is called) was brought to England by Lieut. Henderson, R. N., one of the companions of Captain Ross. This variety of dog most nearly resembles the shepherd's-dog, and the wolf-dog. The ears are short and erect ; the tail is bushy, and carried in a graceful curve over the back : in this particular the Esquimaux dog principally differs from the wolf of the same district, whose tail is carried between his legs in running. The tail *turned upward* is the distinguishing characteristic of the domestic dog,

of every variety. It has been considered by some naturalists, that these dogs are wolves in a state of domestication. The anatomy of both, for the most part, corresponds ; the wolf is, however, larger, and more muscular. The average height of the Esquimaux dog is one foot, ten inches ; the length of his body, from the occiput (the back of the head) to the insertion of the tail, two feet, three inches ; and of the tail itself, one foot, one inch. The dog in the Zoological Garden is of a white colour, with somewhat of a yellow tinge. Some of the Esquimaux dogs are brindled, some black and white, some almost entirely black, and some are of a dingy red. Their coat is thick and furry ; the hair, in winter, being from three to four inches long : nature has also provided them with an under coating of close soft wool, at that season, which they lose in spring ; so that they endure their climate with comparative comfort They never bark ; but have a long melancholy howl, like the wolf. They are familiar and domestic ; but snarl and fight amongst themselves, much more than dogs in general. The specimen in the Zoological Garden is good-tempered, and delights to be noticed and caressed, even by strangers.

The Esquimaux, a race of people inhabiting the most northerly parts of the American continent, and the adjoining islands, are dependent upon the services of this faithful species of dog for most of the few comforts of their lives ; for assistance in the chase ; for carrying burdens ; and for their rapid and certain conveyance over the trackless snows of their dreary plains. The dogs, subjected to a constant dependence upon their masters, receiving scanty food and abundant chastisement, assist them in hunting the seal, the rein-deer, and the bear. In the summer, a single dog carries a weight of thirty pounds, in attending his master in the pursuit of game : in winter, yoked

in numbers to heavy sledges, they drag five or six persons at the rate of seven or eight miles an hour, and will perform journeys of sixty miles a day. What the rein-deer is to the Laplander, this dog is to the Esquimaux. He is a faithful slave, who grumbles, but does not rebel; whose endurance never tires; and whose fidelity is never shaken by blows and starving. These animals are obstinate in their nature; but the women, who treat them with more kindness than the men, and who nurse them in their helpless state, or when they are sick, have an unbounded command over their affections; and can thus catch them at any time, and entice them from their huts, to yoke them to the sledges, even when they are suffering the severest hunger, and have no resource but to eat the most tough and filthy remains of animal matter which they can espy on their laborious journeys.

The mode in which the Esquimaux dogs are employed in drawing the sledge, is described in a very striking manner by Captain Parry, in his "Journal of a Second Voyage for the Discovery of a North-West Passage." We should diminish the value of the narrative were we to abridge it.

"When drawing a sledge, the dogs have a simple harness (*annoo*) of deer or seal-skin, going round the neck by one bight, and another for each of the fore-legs, with a single thong leading over the back, and attached to the sledge as a trace. Though they appear at first sight to be huddled together without regard to regularity, there is, in fact, considerable attention paid to their arrangement, particularly in the selection of a dog of peculiar spirit and sagacity, who is allowed, by a longer trace, to precede the rest as leader, and to whom, in turning to the right or left, the driver usually addresses himself. This choice is made without regard to age or sex; and the rest

of the dogs take precedency according to their training or sagacity, the least effective being put nearest the sledge. The leader is usually from eighteen to twenty feet from the fore part of the sledge, and the hindmost dog about half that distance ; so that when ten or twelve are running together, several are nearly abreast of each other. The driver sits quite low, on the fore part of the sledge, with his feet overhanging the snow on one side, and having in his hand a whip, of which the handle, made either of wood, bone, or whalebone, is eighteen inches, and the lash more than as many feet, in length : the part of the thong next the handle is platted a little way down to stiffen it, and give it a spring, on which much of its use depends ; and that which composes the lash is chewed by the women, to make it flexible in frosty weather. The men acquire from their youth considerable expertness in the use of this whip, the lash of which is left to trail along the ground by the side of the sledge, and with which they can inflict a very severe blow on any dog at pleasure. Though the dogs are kept in training entirely by fear of the whip, and, indeed, without it, would soon have their own way, its immediate effect is always detrimental to the draught of the sledge ; for not only does the individual that is struck draw back and slacken his trace, but generally turns upon his next neighbour, and this passing on to the next, occasions a general divergency, accompanied by the usual yelping and shewing of the teeth. The dogs then come together again by degrees, and the draught of the sledge is accelerated ; but even at the best of times, by this rude mode of draught, the traces of one-third of the dogs form an angle of thirty or forty degrees on each side of the direction in which the sledge is advancing. Another great inconvenience attending the Esquimaux method of putting the dogs to, besides that of not employing their

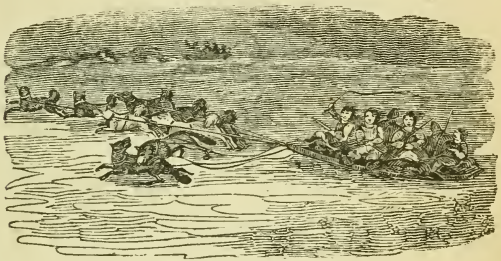
strength to the best advantage, is the constant entanglement of the traces by the dogs repeatedly doubling under from side to side to avoid the whip; so that, after running a few miles, the traces always require to be taken off and cleaned.

"In directing the sledge, the whip acts no very essential part, the driver for this purpose using certain words, as the carters do with us, to make the dogs turn more to the right or left. To these a good leader attends with admirable precision, especially if his own name be repeated at the same time, looking behind over his shoulder with great earnestness, as if listening to the directions of the driver. On a beaten track, or even where a single foot or sledge-mark is occasionally discernible, there is not the slightest trouble in guiding the dogs: for even in the darkest night, and in the heaviest snow-drift, there is little or no danger of their losing the road, the leader keeping his nose near the ground, and directing the rest with wonderful sagacity. Where, however, there is no beaten track, the best driver among them makes a terribly circuitous course, as all the Esquimaux roads plainly shew; these generally occupying an extent of six miles, when, with a horse and sledge, the journey would scarcely have amounted to five. On rough ground, as among hummocks of ice, the sledge would be frequently overturned, or altogether stopped, if the driver did not repeatedly get off, and by lifting or drawing it to one side, steer clear of those accidents. At all times, indeed, except on a smooth and well made road, he is pretty constantly employed thus with his feet, which, together with his never-ceasing vociferations, and frequent use of the whip, renders the driving of one of these vehicles by no means a pleasant or easy task. When the driver wishes to stop the sledge, he calls out 'Wo, woa,' exactly as our carters do, but the

attention paid to this command depends altogether on his ability to enforce it. If the weight is small, and the journey homeward, the dogs are not to be thus delayed; the driver is therefore obliged to dig his heels into the snow to obstruct their progress, and having thus succeeded in stopping them, he stands up with one leg before the foremost cross-piece of the sledge, till, by means of laying the whip gently over each dog's head, he has made them all lie down. He then takes care not to quit his position, so that should the dogs set off, he is thrown upon the sledge instead of being left behind by them.

"With heavy loads, the dogs draw best with one of their own people, especially a woman, walking a little way a-head; and in this case they are sometimes enticed to mend their pace by holding a mitten to the mouth, and then making the motion of cutting it with a knife, and throwing it on the snow, when the dogs, mistaking it for meat, hasten forward to pick it up. The women also entice them from the huts in a similar manner. The rate at which they travel depends, of course, on the weight they have to draw, and the road on which their journey is performed. When the latter is level, and very hard and smooth, constituting what, in other parts of North America, is called 'good sleighing,' six or seven dogs will draw from eight to ten hundred weight, at the rate of seven or eight miles an hour, for several hours together; and will easily, under these circumstances, perform a journey of fifty or sixty miles a day. On untrodden snow, five-and-twenty or thirty miles would be a good day's journey. The same number of well-fed dogs, with a weight of only five or six hundred pounds, (that of the sledge included,) are almost unmanageable, and will, on a smooth road, run any way they please, at the rate of ten miles an hour. The work performed by a greater number of

dogs is, however, by no means in a proportion to this, owing to the imperfect mode already described, of employing the strength of these sturdy creatures, and to the more frequent snarling and fighting occasioned by an increase of numbers."



Esquimaux Dogs and Sledge.

The dogs of the Esquimaux offer to us a striking example of the great services which the race of dogs has rendered to mankind in the progress of civilisation. The inhabitants of the shores of Baffin's Bay, and of those still more inclement regions to which our discovery ships have recently penetrated, are perhaps never destined to advance much farther than their present condition in the scale of humanity. Their climate forbids them attempting the gratification of any desires beyond the commonest animal wants. In the short summers, they hunt the rein-deer for a stock of food and clothing; during the long winter, when the stern demands of hunger drive them from their snow-huts to search for provisions, they still find a supply in the rein-deer; in the seals which lie in holes under the ice of the lakes, and in the bears which prowl about on the frozen shores of the sea. Without the exquisite scent and the undaunted courage of their dogs, the several objects of their chase could

never be obtained in sufficient quantities, during the winter, to supply the wants of the inhabitants; nor could the men be conveyed from place to place over the snow, with that celerity which greatly contributes to their success in hunting. In drawing the sledges, if the dogs scent a single rein-deer, even a quarter of a mile distant, they gallop off furiously in the direction of the scent; and the animal is soon within reach of the unerring arrow of the hunter. They will discover a seal-hole entirely by the smell, at a very great distance. Their desire to attack the ferocious bear is so great, that the word *nennook*, which signifies that animal, is often used to encourage them, when running in a sledge: two or three dogs, led forward by a man, will fasten upon the largest bear without hesitation. They are eager to chase every animal but the wolf; and of him they appear to have an instinctive terror, which manifests itself, on his approach, in a loud and long-continued howl. Certainly there is no animal which combines so many properties useful to his master as the dog of the Esquimaux.

With the exception of that most serviceable property of drawing and carrying burthens, most of the various races of dogs have, in a similar manner, assisted mankind in subduing the earth. In our own country, the wolf, the brown bear, and the boar, were once common; they are now extirpated. This result, without which civilization must have very slowly advanced, could not have been effected without the assistance of the dog. Cuvier, the great French naturalist, says, "the dog is the most complete, the most remarkable, and the most useful conquest ever made by man. Every species has become our property; each individual is altogether devoted to his master, assumes his manners, knows and defends his goods, and remains attached to him until death; and all this proceeds neither from want nor constraint,

but solely from true gratitude, and real friendship. The swiftness, the strength, and the scent of the dog, have created for man a powerful ally against other animals, and were perhaps necessary to the establishment of society. He is the only animal which has followed man through every region of the earth." Buffon says, "the art of training dogs seems to have been the first invented by man; and the result of it was the conquest and peaceable possession of the earth." But this art would never have become perfectly successful and completely universal, had there not been in the race of dogs a natural desire to be useful to man; an aptitude for his society; a strong and spontaneous longing for his friendship. Burchell, a distinguished traveller in Africa, has observed, that we never see in various countries an equal familiarity with other quadrupeds, according to the habits, the taste, or the caprice of different nations; and he thence concludes, that the universal friendship of the man and the dog must be the result of the laws of nature. With singular propriety, therefore, has the name *Canis familiaris* been assigned by Linnæus to the species.

The dogs of the Esquimaux lead always a fatiguing, and often a very painful life. They are not, like the Siberian dogs (to which they bear a considerable resemblance,) turned out in the summer to seek their own sustenance: at that period they are fat and vigorous; for they have abundance of *kaow*, or the skin and part of the blubber of the walrus.* But their feeding in winter is very precarious. Their masters have but little to spare; and the dogs become mise-

* The attachment of these dogs to the taste and smell of fat is as remarkable as the passion of the Cossacks for oil. At Chelsea, there are two domesticated Esquimaux dogs, that will stand, hour after hour, in front of a candle-maker's workshop, snuffing the savoury effluvia of his melting tallow.

rably thin, at a time when the severest labour is imposed upon them. It is not, therefore, surprising that the shouts and blows of their drivers have no effect in preventing them from rushing out of their road, to pick up whatever they can descry; or that they are constantly creeping into the huts, to pilfer any thing within their reach : their chances of success are but small; for the people within the huts are equally keen in the protection of their stores, and they spend half their time in shouting out the names of the intruders (for the dogs have all names,) and in driving them forth by the most unmerciful blows. This is a singular, but, from the difference of circumstances, not unnatural contrast to the treatment of dogs described in Homer. The princes of the Trojan war allowed their dogs to wait under their tables, to gather up the remains of their feasts. In the twenty-third book of the Iliad, it is mentioned that Patroclus had no fewer than nine such humble retainers. The same princes, too, as we learn in the tenth book of the Odyssey, carried home to their dogs the fragments which fell from the tables of their entertainers. Amongst these fragments were the soft and fine parts of bread, called *απομαγδαλιαι*, with which the guests wiped their fingers when the meal was finished, and which were always a perquisite to the dogs. In allusion, probably, to this custom, the woman of Canaan says, "the dogs eat of the crumbs which fall from their master's table."

The hunger which the Esquimaux dogs feel so severely in winter, is somewhat increased by the temperature they live in. In cold climates, and in temperate ones in cold weather, animal food is required in larger quantities than in warm weather, and in temperate regions. The only mode which the dogs have of assuaging or deceiving the calls of hunger, is by the distention of the stomach with any filth which they can find to swallow. The wolves and rein-deer of the

polar countries, when pressed by hunger in the winter, devour clay. The Kamschatkans sometimes distend their stomachs with saw-dust. Humboldt relates that the Otomacs, during the periodical inundation of the rivers of South America, when the depth of the water prevents their customary occupation of fishing, appease their hunger, even for several months, by swallowing a fine unctuous clay, slightly baked. Many other instances of this nature are given in Dr. Elliotson's learned and amusing Notes to his edition of Blumenbach's Physiology. The painful sense of hunger is generally regarded as the effect of the contraction of the stomach, which effect is constantly increased by a draught of cold liquid. Captain Parry mentions that in winter the Esquimaux dogs will not drink water, unless it happen to be oily. They know, by experience, that their cravings would be increased by this indulgence, and they lick some clean snow as a substitute, which produces a less contraction of the stomach than water. Dogs, in general, can bear hunger for a very long time, without any serious injury, having a supply of some substance for the distension of their stomachs. It is mentioned in the Memoirs of the French Academy of Sciences, that a bitch, which had been shut up and forgotten in a country house, was sustained for forty days without any nourishment beyond the wool of a quilt, which she had torn in pieces. A dog has been known to live thirty-six days without food, or substitute for food.

We have already noticed that the Esquimaux dogs do not bark. This is a peculiarity of many varieties of the dog; but very rarely of those which are natives of temperate countries. Probably this is an effect of high as well as of low temperature. Sonnini says, that the people of Upper Egypt have a species of dog resembling the shepherd's dog, with voices so weak, that their barking can scarcely be heard. Co-

lumbus observed, that the voices of the dogs which he took to the West Indies became feeble. In both cases the tropical climate probably produced this result. The prophet Isaiah alludes to this peculiarity, in his denunciation of idle instructers: "They are dumb dogs, and cannot bark."

The inhabitants of Holland and the Netherlands have long been accustomed to the use of dogs for purposes of draught. Pennant mentions, that in those countries they draw little carts to the herb-markets. In London, within these few years, the use of dogs in dragging light vehicles has become very general; and though their strength is rarely employed in combination, as is the case with the Esquimaux sledge-dogs, their energy makes them capable of moving very considerable weights. There are many bakers in the more populous parts of London who have a travelling shop upon wheels, drawn by one or two stout mastiffs or bull-dogs. But the venders of cat's meat appear to have derived the largest benefit from

this application of animal power. The passenger through the narrow streets and lanes of London is often amused by the scenes between the consumers of the commodity and those who bring it to the houses. At the well known cry of the dealer, the cats of a whole district are in activity—anxiously peeping out of the doors for the expected meal, and sometimes fearlessly approaching the little cart, without apprehension of their supposed enemy who draws it.

The dogs attached to these carts appear to have no disposition to molest the impatient groups of cats who gather around them. The habit of considering dogs and cats as natural enemies has tended to the production of a great deal of cruelty. It is true that dogs will, by instinct, pursue anything which flies from them; and puppies will thus run after, and frequently kill, chickens. But dogs, by chastisement, may be made to comprehend that nothing *domestic* must be molested. Beckford, a writer on hunting, alludes to the circumstance of buck-hounds playing with deer on a lawn, within an hour or two after a chase of the same species. There is at present a tame doe in the streets of London, belonging to some person near St. Clement's Church-yard, which the passing dogs never affront; and we have seen, some years ago, at Goodwood, the seat of the Duke of Richmond, a pack of fox-hounds, on their way to cover, go close to a fox chained at the outer gate of their kennel, without taking the slightest notice of him. This, at any rate, shews that dogs have their instincts under subjection to the commands of their friend and master, man.

The Newfoundland dogs, one of the most active and sagacious varieties, are employed in their native districts to draw carts and sledges, laden with wood and fish, and to perform a variety of useful offices, in the place of the horse. In many of the northern

countries, the bold and powerful races of dogs are thus rendered peculiarly valuable. A century ago, nearly all the travelling intercourse of Canada was carried on by dogs. The superiority of the Newfoundland dogs in swimming is well known : they are semi-webbed between the toes, which mechanism of the foot is of the greatest advantage to them ; presenting, as it does, an extended surface to press away the water from behind, and then collapsing, when it is drawn forward, previous to making the stroke. The hereditary habits of these dogs, too, eminently qualify them for swimming, or rowing through the water, as the action is more correctly described by Sir Everard Home. It is thus that we have the most abundant instances of human life being saved by these generous and courageous animals. All dogs, however, can swim ; although some dislike the water, and take to it with difficulty at the bidding of their masters. The bull-dog would appear the least likely to combat with a heavy sea, as the Newfoundland dogs often do ; and yet the following circumstance is well authenticated :—On board a ship, which struck upon a rock near the shore during a gale, there were three dogs, two of the Newfoundland variety, and an English bull-dog, rather small in growth, but very firmly built and strong. It was important to have a rope carried ashore ; and as no boat could live for an instant in the breakers towards the land, it was thought that one of the Newfoundland dogs might succeed ; but he was not able to struggle with the waves, and perished. The other Newfoundland dog, upon being thrown overboard with the rope, shared a similar fate. But the bull-dog, though not habituated to the water, swam triumphantly to land, and thus saved the lives of the persons on board. Among them was his master, a military officer, who still has the dog in his possession.

Dog of the Mackenzie River.

In the northern parts of the continent of America, there are dogs of a very different variety from those of the Esquimaux. They are slender and graceful, with sharp nose and pricked ears, and very much resemble, except in colour, the arctic fox of the same regions. Indeed these dogs are considered a variety of this fox — (*canis lagopus.*) Three of this species, from the Mackenzie River, are in the gardens of the Zoological Society. They were presented by Captain Franklin and his scientific companion, Dr Richardson. Their hair is exceedingly fine and silky, increasing in thickness in the winter, and then also becoming more generally white. The specimen in the above woodcut was drawn in the autumn, when the black parts of the coat were distinctly marked; those parts are now (the beginning of February) of a much lighter colour — somewhat of a slaty grey. This variety is

cultivated by the Hare Indians ; and, from its light make and the breadth of its feet, is peculiarly fitted for chasing the moose deer over the snow, without sinking, as a heavier dog would do.

The dog of the Laplander, which watches the herds of the rein-deer to guard them from the attacks of wolves, which collects them when they are dispersed, and assists his master in driving them to the fold to be milked, is a different variety from that of the Mackenzie River, but is somewhat similar in its slightness and colour.

The changes in the quantity and colour of their clothing, which almost all polar animals undergo with the change of seasons, is one of the most remarkable and beautiful provisions of nature. The fur, or wool, or feathers, with which quadrupeds and birds are covered, is regulated generally as to its quality and quantity by the temperature of the region which the animal inhabits. The dogs of Guinea, the Indian sheep, and the African ostrich, are so thinly clothed that they may be considered almost naked. The temperature of their bodies is thus necessarily diminished in proportion to the heat of the climate in which they live. The Iceland sheep and the Esquimaux dog, on the contrary, are covered with a warm coat, both of hair and wool, which enables them to bear the most intense cold without much inconvenience. Previous to winter, the hair of all animals is increased in quantity and length, and the more they are exposed the greater is the increase. Horses and cows, housed during the winter, have short and thin hair, in comparison with those exposed to the weather, whose coats become shaggy. The groom is aware of this arrangement of nature, and he redoubles his labour in winter to give his horse a fine coat, and thus to render him unfit for exposure to the cold. The agents of the Hudson's bay Com-

pany, who annually transmit to Europe many thousands of the most valuable furs, will only purchase of the Indians, with whom they traffic, those which are obtained during the winter. The furs of those animals of North America which are killed in the summer are quite unfit for purposes of commerce, and they are of an inferior quality early in the winters of unusual mildness. The growth of the hair is dependent upon the temperature of the atmosphere ; and thus the skins of hares and rabbits with us are seldom ripe in the fur, as it is called, till frosty weather has set in. The moulting of birds, which takes place previous to winter, after their young are reared, is a similar provision of nature. By the renewal of the feathers, a sufficient covering is afforded to enable them to bear the approaching change of season.

The changes of *colour* in many of the polar animals, and in others with which we are more familiar, though an undisputed fact, is not generally understood as proceeding from the same principle of adaptation to the change of season, as the increase in the quantity of their clothing. The Alpine hare, which is found in Scotland, is in summer of a tawny gray ; in winter it becomes of a snowy white. The ermine, which is also found in the British islands, has its summer coat of a reddish brown ; in winter it affords the beautiful white fur which is so generally known, and with which the robes of our judges are adorned. At the Duke of Devonshire's villa at Chiswick, there is a fine specimen of the Arctic fox. When we saw it in September, the colour was of a dingy blue ; in January it was perfectly white. The plumage of the ptarmigan, a bird of the grouse species which breeds in Scotland, is of an ash colour, with dusky spots, in summer, and of a pure white in winter. The rapidity with which the colours change, and the extent of

the alteration, in these examples and in other animals, always depend upon the severity of the season. But the advantage of the change, whether it be complete or incomplete, is sufficiently evident, when we take into consideration a well known philosophical principle. Every one is aware that in summer a black hat produces a much stronger sense of heat to the wearer than a white one. The same thing occurs to animals of a black and white colour. If they are placed in a higher temperature than that of their own bodies, the heat will enter the one that is black with the greatest rapidity, and elevate its temperature very much above that of the other. When these animals, on the contrary, are placed in a situation where the temperature is considerably lower than that of their own bodies, the black animal will give out its heat by radiation to every surrounding object colder than itself, much more quickly than the white animal. The surface which reflects heat most readily, as in objects of a white colour, suffers it to escape but slowly by radiation; and it is for this reason that the white animal has its temperature reduced most slowly in the winter.* The change of colour in the clothing of some quadrupeds and birds exposed to severe cold, as well as the increase in the quantity of their outward protection against its effects, forms one of those beautiful provisions of the Author of Nature which we recognise in every examination of his works, but which we sometimes overlook in our hasty notice of ordinary appearances, without regard to the causes from which they spring.

The dogs of the Mackenzie River in the gardens of the Zoological Society are extremely gentle. They

* See Fleming's Philosophy of Zoology, vol. ii. The protection of the animal from pursuit is by some considered another end answered by the colour resembling that of the surrounding snow,

retain, however, something of a wild nature. One of them was allowed, some time since, to run by the side of a gentleman connected with the society. For a little while he was tractable ; but he suddenly darted away, and was only retaken after a sharp chase, not very different from a fox-hunt. One of them, which was whelped in this country, barks—a property which would appear either to indicate that barking is a peculiarity of the domestication of the dog, or an effect of temperature.

Many of the dogs of the northern regions can only be considered as half-domesticated. The Esquimaux dogs, and those of the Laplanders, are indeed faithful to their masters, return caresses for blows, and are to a certain extent obedient ; but even these rebel against authority, and fear no chastisement, when they desire to satisfy their voracious appetites. The probability is that they would be entirely obedient if they were regularly fed. As man in a highly civilized state acquires the greatest command over his instinctive powers, so the inferior animals, and dogs in particular, partake of this effect of civilization. An English household dog will enter a larder, even when hungry, and not touch the provisions which he finds unguarded ; the Esquimaux dog, on the contrary, is always contending with the family of his master for a share of their scanty fare. An experienced pointer passes by the place from which he has seen a covey spring, without indulging the feelings which must be aroused by the scent which the birds have left behind ; the Esquimaux dog often drags away his sledge in the direction of a rein-deer or a seal, quite uncontrollable by his surly master. Perhaps the education of each variety may have much to do with this. Those who have studied the training of sporting dogs have observed that gentle chastisements, often repeated, and mixed with kindness,

produce the most perfect obedience, while hasty severity frightens the animal for the moment, but leaves no permanent impression. The feeding of a kennel of fox-hounds is one of the most striking illustrations of the power of training to produce complete obedience. The energy and even fierceness of these dogs cannot be overlooked; there is nothing slavish and crouching in their demeanour. They are hungry, and they know they are about to be fed; but they manifest no rebellious impatience. The feeder stations himself at the door which separates the outer kennel from the feeding room. At his presence a cry of joy is set up by the whole pack, but it is instantly silenced at his command. He calls "Juno"—Juno passes out; "Ponto"—Ponto follows; and so on through the pack, even if there be thirty couple. If a young dog should attempt to go out of his order, he is turned back; he recollects the punishment, and he seldom again transgresses. The pack has arrived at this state of perfect discipline by gentle correction, and, what is more important, by a system of *mutual instruction*, if we may venture so to express this particular force of example. In the kennels of packs of fox-hounds the following barbarous custom of the dogs towards one another has been sometimes observed. If a hound gets down of his own accord from the bench on which he is lying, no notice of it is taken by the others. But if a hapless hound falls off the bench from awkwardness, his companions fly at him and bite him to death.

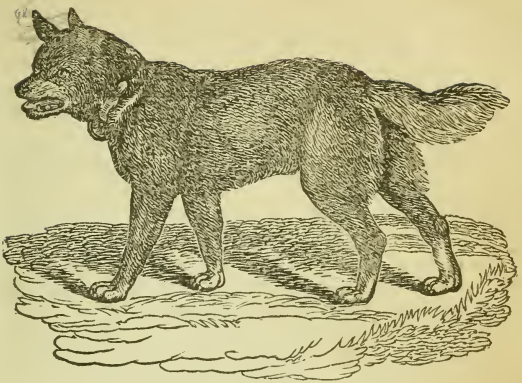
The dogs of Kamtschatka, as described in Von Langsdorff's Travels, when, in summer, they are not wanted to draw the sledges of the inhabitants, are left to rove at large and find their own food. They keep on the seashore, or in the neighbourhood of rivers, lurking after fish, and standing in the water

up to their bellies : when they see a fish, they snap at it with unerring aim. In the autumn, they return of their own accord to their particular owners in the villages. Hunger may have something to do with this voluntary resignation of their liberty after their absolute freedom ; and the author from whom we gather these particulars attributes the circumstance wholly to hunger ; but it appears to us that habit contributes an equally powerful motive, and that the two motives both operate. A herd of cows, which come of their own will to the farm-yard at milking time, from a distant pasture, desire to be relieved of the burthen of their swollen udders ; and they know from habit, and the example of other cows who have thus acted, in what manner, and at what period, that relief will be afforded them. Many of the inferior animals have a distinct knowledge of time. The sun appears to regulate the motions of those which leave their homes in the morning, to return at particular hours of the evening. The Kamtschatka dogs are probably influenced in their autumnal return to their homes by a change of temperature. But in those animals possessing the readiest conceptions, as in the case of dogs in a highly civilized country, the exercise of this faculty is strikingly remarkable. Mr. Southey, in his Omniana, relates two instances of dogs who had acquired such a knowledge of time as would enable them to count the days of the week. He says, " my grandfather had one which trudged two miles *every Saturday* to cater for himself in the shambles. I know another more extraordinary and well-authenticated example. A dog, which had belonged to an Irishman, and was sold by him in England, would never touch a morsel of food *upon Friday*." The same faculty of recollecting intervals of time exists, though in a more limited extent, in the horse. We

knew a horse (and have witnessed the circumstance,) which, being accustomed to be employed once a week on a journey with the newsman of a provincial paper, always stopped at the houses of the several customers, although they were sixty or seventy in number. But, further, there were two persons on the route who took one paper between them, and each claimed the privilege of having it first on the alternate Sunday. The horse soon became accustomed to this regulation; and although the parties lived two miles distant, he stopped once a fortnight at the door of the half-customer at Thrope, and once a fortnight at that of the other half-customer at Chertsey, and never did he forget this arrangement, which lasted several years, or stop unnecessarily, when he once thoroughly understood the rule.

Amongst the dogs which may be considered in a half-domesticated state are those of New South Wales. The species is common in the neighbourhood of Port Jackson, and is found on all parts of the coast.

The following cut is from a fine male specimen in the Zoological Garden. This dog was presented to the Zoological Society by Captain Murray. The Australasian dog is classed by M. Desmarest as a variety of the matin, a class which includes the matin of France, the Danish dog, the common greyhound, the Irish greyhound, &c. His shape and proportions, as described by the same accurate observer, are like those of the shepherd's dog, excepting the head, which entirely resembles the French matin. His body is thick with hair; his tail bushy: the hair is of two sorts; one woolly and gray, the other silky and of a deep yellow. The colour is deepest on the top of the head, and on the upper parts of the neck and tail, and the back: the under parts of the neck and tail are paler:



Australasian Dog, or Dingo.—Shaw.
Canis famil. Australasiæ.—Desmarest.

the muzzle and face, and the inner side of the hams, are whitish. The tail has eighteen vertebræ* (dogs in general have nineteen.) The length of the carcase, from the point of the nose to the commencement of the tail, is two feet, five inches. This dog possesses great agility, and is full of courage ; when running, he carries his head up, and his tail raised or extended horizontally ; and he is very voracious, seizing upon every sort of animal food that comes in his way.

The Australasian dog in the Zoological Gardens differs very little from these particulars. It is difficult to describe colours by words ; but it appears to us, that the animal partakes more of red than yellow. He is kept strictly confined, though gentle under confinement ; but for some time he retained his natural wild aspect. Mr. Pennant relates that a similar

* Desmarest.

dog brought to this country was very voracious and fierce ; and that he leaped on the back of an ass, and would have destroyed it in a short time, had not the animal been rescued. Mr. Gray, in his Appendix to Captain King's Survey of the Coast of Australia, says, that "although occasionally domesticated in New South Wales, they never lose the sly habits peculiar to their breed, nor can be prevented from killing poultry, or biting sheep." This account is quite borne out by the character of the individual dog before us. Since his arrival in England, at the house of a nobleman where he was confined, he one night broke his chain ; scoured over the country ; and, before morning, had destroyed several sheep.

The natural habits of the species, even in dogs, are not entirely overcome by domestication. The well-fed dog, however he may know from experience that he shall receive a regular meal from the hand of his master, often hides his food ; although, perhaps, he never returns to his concealed stores : this is an hereditary habit, transmitted to him from a distant period, when his species were dependent upon chance for the supply of their necessities. The Australasian dog, who is taken from a country very imperfectly civilized, and who has perhaps lived in packs, associated in the pursuit of the penguin and the kangaroo, cannot readily put on the subordination of the mastiff or the spaniel. Even among the best disciplined domestic dogs of our own country, the ancient instinct, which renders them beasts of prey, sometimes breaks out. We recollect several instances within our own knowledge, of house-dogs having taken, as the farmers expressed it, to worrying sheep: they would do this slily ; and would sometimes effect the most lamentable destruction. There is no remedy short of the capital punishment of such offenders ; for they can never be broken of the habit, when

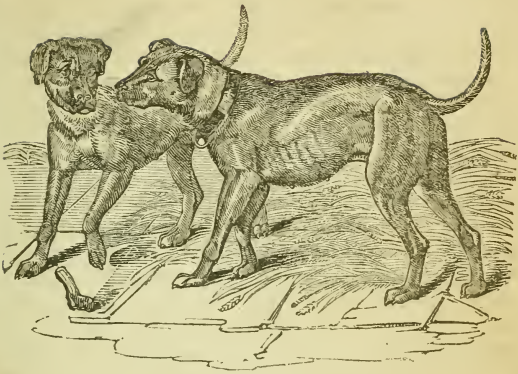
it has been once indulged. Bewick, in his History of Quadrupeds, relates a story of a dog, who, in 1784, had been left on the coast of Northumberland by the crew of a smuggling vessel. Finding himself deserted, and without food, he began to worry sheep, and was soon the terror of the country. He would bite a hole in the right side of the poor animals, eat the fat about the kidneys, and then leave them. The farmers were so much alarmed by his depredations, that very extraordinary means were used for his destruction : they chased him with dogs, as they would a fox or wolf; but when the dogs came up to their guilty fellow, he invariably lay down in a supplicating posture, and thus they could never be induced to harm him. He was one day pursued from Howick to upwards of thirty miles distance ; but he returned thither, and killed sheep the same evening. He was at last shot, after a three months' career of murder, upon a rock which commanded a view of four roads; and where he constantly sat, like a guilty outlaw, watching the approach of his pursuers, and ready for escape. The practice of this dog was evidently the result of an hereditary instinct, accidentally called into action by want of food.

Not only are natural habits transmitted especially to dogs, by their parents, but even some of their acquired qualities. The pointer is of Spanish origin; and those of the stanchest kind in this country are crossed with the fox-dog, to increase their speed. The natural instinct of the pointer, as seen at the present day, in the true Spanish race, is to wind game ; to steal upon them by surprise ; and then, pausing for an instant, to spring upon them with an unerring aim, derived from this pause. The crossed breed, which we possess, is less disposed, by its original nature, to stop at game, than the Spanish progenitor. But education has converted the rapid rest

and spring of the original Spanish pointer into the fixed and deliberate rest of the staunch dog; as a writer on this subject has quaintly, but forcibly, expressed it, "this sort of semicolon in his proceedings man converts into a full stop."* The *cultivated* staunchness of the pointer is inherited by his puppy, which may be seen earnestly standing at pigeons or sparrows, in a farm-yard: he inherits the acquired faculty of his parent; and his master afterwards gives it a direction. Such acquired hereditary habits will probably last through many generations of animals. Near Patara, in Asia Minor, Captain Beaufort, as he states in his "Karamania," found immense numbers of red-legged partridges (*tetrao rufus.*) This country was formerly extremely populous; and its partridges are mentioned in the ancient classics: it is now almost deserted. Partridges, as well as other birds, acquire shyness artificially, from their terror of man; and yet Captain Beaufort found these birds, which, individually, could have had no apprehension of the human race, extremely wild, to use the sportsman's phrase. Might not this shyness have been transmitted to them as an hereditary habit, from the times when the country was populous, and they were pursued by the inhabitants?

There is a pair of very beautiful mastiffs from Cuba in the garden of the Zoological Society. During the summer they were chained to separate kennels, as mastiffs usually are; through the winter, they have been placed in a den, perfectly sheltered from the weather. In their general form they very much resemble the English mastiff, the *Canis familiaris anglicus* of Desmarest, whose principal characteristics are,—a very short head, similar, in a great degree, to the head of the bull-dog, the dis-

* Thoughts and Recollections, by One of the last Century.



Spanish Mastiffs from Cuba.

tinctive mark of which is a flat fore-head ; the ears pendant, and never erect ; the lips falling, covering the lower jaw ; the extremity of the tail turned upwards ; a fifth claw on the hind foot, more or less developed ; the nostrils separated one from another by a very deep furrow; the hair generally close and short ; the colour various. The Cuba mastiffs above represented are of a rufous-brown, extremely beautiful ; with their muzzles approaching to a jet black : they are tractable and gentle.

The bare mention of the dogs of South America must call up some of the most painful recollections in the history of the human race. The dog was entirely unknown to the inhabitants of the New World, before the period when it was introduced there by the Europeans ; if we except an extremely small species, called the Alco, which the Peruvians are represented

to have domesticated as a sort of lap-dog. The only description which we have of this animal, is in a work by Fernandez ; and the rude drawing, which is there given of it, enables us to form no accurate notion of its peculiar character. At the island of St. Martha, Columbus found, according to Herrera's History of the Discovery of America, "many dogs which did not bark:" these are generally supposed to have been a species of wolf. The horse, the ox tribe, and the hog, were equally unknown to the Americans, before the discovery by the Spaniards. The conquerors introduced each species ; and they multiplied so amazingly, that the horses, the horned cattle, and the hogs, overran the whole country, and to this day are found on the continent of South America, in numerous herds ;—the horses always ready for the service of the natives, who are the best riders in the world; and the bullocks constantly offering a supply of food, and so numerous, that they are sometimes slaughtered for their hides alone. The number of the dogs is much lessened; but a century and a half ago, in Hispaniola, (now called Hayti,) Cuba, and all the Caribbee islands, they were in such quantities, that they were occasionally destroyed, to prevent their ravages upon the calves and foals of the wild cows and mares. According to the relations of the American voyagers of the seventeenth century, these dogs hunted in packs of fifty or sixty, and they would attack a herd of wild-boars without any fear. The late Bishop of Calcutta, Reginald Heber, in his Journal, confirms a statement which used to be doubted as to the wild dogs of India hunting ferocious beasts. He states, upon the authority of the Khaysa peasants, near the Chinese frontier, that a tiger is often killed and torn to pieces by large packs of these dogs, which give tongue, and possess a very fine scent. The American wild-dogs were very easily reclaimed to society. If their whelps

were taken to the towns, they would grow up in the most perfect submission : this appears to be the case with all wild dogs ; they never lose their respect for the human species ; and they never voluntarily separate themselves from that state of dependence upon us, which seems necessary for the gratification of an instinctive feeling. Even when they are without individual masters, dogs will frequent the abodes of man. They are found in this half-wild state at Lisbon, and at Constantinople and other cities of the east. They are driven as unclean from the houses of the Mahometans ; and yet the same people protect them, when they are roaming about their dwellings. The dog of the seven sleepers, according to a tale in the Koran of Mohamed, is the only quadruped admitted into heaven ; but the people of the east have more substantial reasons for patronising these half-wild dogs than they find in the legends of their faith. Volney, in his Travels, describes the dogs of Turkey and its dependencies as particularly useful in clearing the streets of the garbage and carrion, which would otherwise become the cause of pestilence and death. It is to this circumstance that the powerful, but somewhat revolting description of Lord Byron refers, in the poem of the Siege of Corinth :

> " I saw the lean dogs beneath the wall,
> Howl o'er the dead their carnival,
> Gorging and growling o'er carcass and limb—
> They were too busy to bark at him.
> From a Tartar's skull they had stript the flesh,
> As you peel a fig when the fruit is fresh.
> . . . . . .
> The Tartar's skull 's in the wild-dog's maw,
> And the hair around his tangled jaw."

From the earliest times, the dogs of the east appear to have been without masters. The following passage in the fifty-ninth Psalm evidently refers

to this custom : " At evening let them return ; and let them make a noise like a dog, and go round about the city. Let them wander up and down for meat, and grudge if they be not satisfied ;" or, according to another interpretation, " if they be not satisfied, there they will stay all night." Harmer, a commentator on the Bible, explains this passage, by stating the fact, that dogs in the east do not appear to belong to any particular persons, as our dogs do, nor to be fed distinctly by such as might claim some interest in them, but get their living how they can.

The circumstances attending the introduction of dogs into the South American continent and islands, and their subsequent wild state, are thus described in a singular book, " The History of the Buccaneers."

" But here the curious reader may, perhaps, inquire, how so many wild dogs came here. The occasion was, the Spaniards having possessed these isles, found them peopled with Indians, a barbarous people, sensual and brutish, hating all labour, and only inclined to killing, and making war against their neighbours, not out of ambition, but only because they agreed not with themselves in some common terms of language ; and perceiving the dominion of the Spaniards laid great restrictions upon their lazy and brutish customs, they conceived an irreconcileable hatred against them, but especially because they saw them take possession of their kingdoms and dominions ; hereupon they made against them all the resistance they could, opposing everywhere their designs to the utmost ; and the Spaniards finding themselves cruelly hated by the Indians, and nowhere secure from their treacheries, resolved to extirpate and ruin them, since they could neither tame them by civility, nor conquer them with the sword. But the Indians, it being their custom to make their woods their chief places of defence, at present made these their refuge,

whenever they fled from the Spaniards; hereupon, those first conquerors of the New World made use of dogs to range and search the intricatest thickets of woods and forests, for those their implacable and unconquerable enemies; thus they forced them to leave their old refuge, and submit to the sword, seeing no milder usage would do it; hereupon they killed some of them, and quartering their bodies, placed them in the highways, that others might take warning from such a punishment: but this severity proved of ill consequence; for, instead of frighting them and reducing them to civility, they conceived such horror of the Spaniards, that they resolved to detest and fly their sight for ever: hence, the greatest part died in caves and subterraneous places of woods and mountains, in which places I myself have often seen great numbers of human bones. The Spaniards, finding no more Indians to appear about the woods, turned away a great number of dogs they had in their houses, and they finding no masters to keep them, betook themselves to the woods and fields to hunt for food to preserve their lives; thus, by degrees, they became unacquainted with houses, and grew wild. This is the truest account I can give of the multitudes of wild dogs in these parts."

This dreadful narrative is abundantly confirmed even by the Spanish historians; who seem, like the Buccaneer from whom we have quoted this passage, not to have had that natural horror of deeds of cruelty, with which the accounts of them must inspire us who look upon such things without passion or partiality. Columbus was in many respects a good and great man; and yet, when he found, upon his return from Spain to Hispaniola, that the unfortunate people were in revolt against the oppressions of his soldiers, he was determined to put them to death, in the most cruel manner, for that resistance to tyranny which was

their natural right and duty. He went forth against the wretched people with his foot-soldiers and cavalry. The historian Herrera adds, " part of the force employed by Columbus, on this occasion, consisted of twenty blood-hounds, which made great havoc amongst the naked Indians." Only one of the writers of these times speaks of such cruelties as they deserve ; and he was an extraordinary enthusiast, who spent his whole life in the endeavour to mitigate the fury of the conquerors. The name of this benevolent man was Bartholomew Las Casas. Relating the events which took place in the island of Cuba, he says, " In three or four months I saw more than seven thousand children die of hunger, whose fathers and mothers had been dragged away to work in the mines. I was witness at the same time of other cruelties not less horrible. It was resolved to march against the Indians who had fled to the mountains. They were chased, like wild beasts, with the assistance of blood-hounds, who had been trained to the thirst for human blood. Other means were employed for their destruction, so that before I had left the island, a little time after, it had become almost entirely a desert." And a desert it has partly remained to this day. The coast, which was most populous at the time when Columbus first touched there, is that which extends westward of the city of Trinidad along the gulf of Xagua. Mr. Irving, the historian of Columbus, thus describes its present state :—"All is now silent and deserted : civilization, which has covered some parts of Cuba with glittering cities, has rendered this a solitude. The whole race of Indians has long since passed away, pining and perishing beneath the domination of the strangers whom they welcomed so joyfully to their shores." We shudder ; and yet this is only a page out of the great book of human history, which records but little else than evils committed upon

mankind, under the hateful names of conquest and glory.

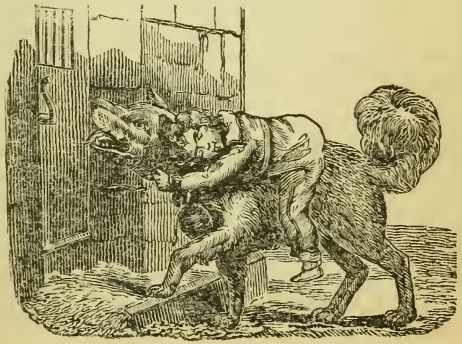
We could almost lose our love of dogs in thus learning how they have been trained for the most abominable purposes, did not our indignation more properly attach to those who so trained them. But the history of dogs will at once shew us that their sagacity, their quick scent, their courage, and their perseverance, may be equally well trained for good as for evil. It is delightful to turn from the blood-hounds of the conquerors of America to the Alpine spaniels of the monks of St. Bernard. These wonderful dogs have been usually called mastiffs, probably on account of their great strength; but they strictly belong to the subdivision of Spaniels, amongst which are found the shepherd's dog, the Esquimaux dog, and the other varieties most distinguished for intelligence and fidelity.

The convent of the Great St. Bernard is situated near the top of the mountain known by that name, near one of the most dangerous passages of the Alps, between Switzerland and Savoy. In these regions the traveller is often overtaken by the most severe weather, even after days of cloudless beauty, when the glaciers glitter in the sunshine, and the pink flowers of the rhododendron appear as if they were never to be sullied by the tempest. But a storm suddenly comes on; the roads are rendered impassable by drifts of snow; the avalanches, which are huge loosened masses of snow or ice, are swept into the vallies, carrying trees and crags of rock before them. The hospitable monks, though their revenue is scanty, open their doors to every stranger that presents himself. To be cold, to be weary, to be benighted, constitute the title to their comfortable shelter, their cheering meal, and their agreeable converse. But their attention to the distressed does not end here. They devote themselves to the dangerous

task of searching for those unhappy persons who may have been overtaken by the sudden storm, and would perish but for their charitable succour. Most remarkably are they assisted in these truly Christian offices. They have a breed of noble dogs in their establishment, whose extraordinary sagacity often enables them to rescue the traveller from destruction. Benumbed with cold, weary in the search for a lost track, his senses yielding to the stupifying influence of frost, which betrays the exhausted sufferer into a deep sleep, the unhappy man sinks upon the ground, and the snow-drift covers him from human sight. It is then that the keen scent and the exquisite docility of these admirable dogs are called into action. Though the perishing man lie ten or even twenty feet beneath the snow, the delicacy of smell with which they can trace him offers a chance of escape. They scratch away the snow with their feet ; they set up a continued hoarse and solemn bark, which brings the monks and labourers of the convent to their assistance. To provide for the chance that the dogs, without human help, may succeed in discovering the unfortunate traveller, one of them has a flask of spirits round his neck, to which the fainting man may apply for support ; and another has a cloak to cover him. These wonderful exertions are often successful ; and even where they fail of restoring him who has perished, the dogs discover the body, so that it may be secured for the recognition of friends ; and such is the effect of the temperature, that the dead features generally preserve their firmness for the space of two years. One of these noble creatures was decorated with a medal, in commemoration of his having saved the lives of twenty-two persons, who, but for his sagacity, must have perished. Many travellers who have crossed the passage of St. Bernard, since the peace, have seen this dog, and have heard, around the blazing fire of the monks. the story of his extraordi-

nary career. He died about the year 1816, in an attempt to convey a poor traveller to his anxious family. The Piedmontese courier arrived at St. Bernard in a very stormy season, labouring to make his way to the little village of St. Pierre, in the valley beneath the mountain, where his wife and children dwelt. It was in vain that the monks attempted to check his resolution to reach his family. They at last gave him two guides, each of whom was accompanied by a dog, of which one was the remarkable creature whose services had been so valuable to mankind. Descending from the convent, they were in an instant overwhelmed by two avalanches ; and the same common destruction awaited the family of the poor courier, who were toiling up the mountain in the hope to obtain some news of their expected friend. They all perished.

A story is told of one of these dogs, who, having found a child unhurt whose mother had been destroyed by an avalanche, induced the poor boy to mount upon his back, and thus carried him to the gate of the convent. The subject is represented in a French print :—



In looking back upon the few, out of the many varieties of the dog, which we have already noticed, we cannot avoid observing the extraordinary modifications of which this quadruped has become susceptible. These modifications are so extensive, and have existed so long, that it is now impossible to decide which is the original breed. Buffon attempted a theory of this nature, but it is evidently unsupported by facts. Almost every country in the world possesses its different kind of dog, and in each of these kinds there are essential differences of character produced by education. The Esquimaux dog draws a sledge, the shepherd's dog guards a flock; the mastiff protects a house, a dog very similar in nature worries a bull; the Spanish blood-hound hunts the naked Indian to the death, while the dog of St. Bernard rescues the perishing man at the risk of his own life. The dog, certainly, has the greatest sympathies with man of all the race of quadrupeds; and the nearer an animal approaches us, and the more easily he comprehends us, the more are we enabled to modify his nature and form his character. What is true of a species is also true of a class. The quadruped is more easily modified,—that is, the class is more susceptible of instruction,—than the bird, the bird than the insect, the insect than the fish. The difference between intelligence and instinct—the nice partition which divides these qualities,—has formed the subject of infinite speculation. The qualities are certainly not one and the same, as some philosophers have maintained. With regard to the different possession of the qualities, the animal kingdom has been thus divided: 1. Animals endowed with intelligence and instinct, comprising all the *vertebrated division*, since they possess a spino-cerebral, nervous apparatus, (the seat of intelligence,) and a nervous sympathising, or ganglionic system, (the seat of instinct;)

2. Animals endowed with instinct only, comprising all the *invertebrated division*, since they only possess the ganglionic or sympathising nervous system, amongst all the species with visible nerves.* Of the vertebrated animals, those which most easily acquire habits from man are quadrupeds ; and of quadrupeds those which are most easily modified are the species which belong to those united in groups naturally, by the social affection. The further we descend in the scale of existence, the greater is the separation from man ;—till at last arriving at the vegetable, we find a living substance capable of modification without any effort of its own will ; and thus, having only spontaneous inclinations for heat and light and moisture, undergoing much greater changes from cultivation than animals, however docile. With regard to those animals in the highest scale next to man, the more artificial are their habits, the more are they modified by the circumstances of their domestication. On the contrary, the more natural their habits, the fewer are the deviations from their specific character. The Esquimaux dog and the Dingo differ very slightly from the wolf, which probably is of the same original family. The petted spaniel could scarcely be recognized as belonging to the species.

The senses of the higher quadrupeds, such as the dog and the horse, are the instruments by which man employs them for his use ; and he renders those senses more powerful, in proportion as he cultivates the faculties by which the senses are disciplined. Thus, the senses which are most called into action in the dog are those of smell and hearing. The compensation, if we may so express it, with which Nature balances her gifts, is very remarkable.

* See the article "L'Instinct," in "Nouveau Dictionnaire d'Histoire Naturelle," 2d edit.

The chamois, which dwells on the mountains, has a very long sight; the rhinoceros, which inhabits the marshes, sees very keenly for a short distance: the weaker animals, such as rabbits and hares, have the most exquisite sense of hearing; the beasts of prey have piercing eyes, but their ears are dull.* The force of one sense generally compensates for the weakness of another. Thus, dogs have not a very powerful sight, (with the exception of the greyhound, which does not smell keenly,) but their smell, and generally their hearing, are exquisite. It is the perfection of each of these senses that renders dogs so valuable to man in procuring his food and guarding his property.

Without attempting to explain the peculiar construction of the organ of smell (which would presuppose a knowledge of the meaning of anatomical terms), it may be mentioned that the nasal organs (the nostrils) are most extensively evolved or unfolded, wherever the sense of smell is the most exquisite. Blumenbach states that, in the head of a North American Indian—a leader of his nation, who was executed at Philadelphia about fifty years ago,—the internal nostrils were found of a most extraordinary size. The wonderful acuteness of smell possessed by these savages is recorded in all accounts of their manners. It is well known that the keenest scented hounds have the largest nostrils.

The comparative quickness of hearing in dogs probably depends, in great measure, on the form of the external ear. Shakspeare has described the matchless hounds of Theseus as dogs whose

> "Heads are hung
> With ears that sweep away the morning dew."

* See "Histoire des Mœurs et de l'Instinct des Animaux, par J. J. Virey." Paris, 1822.

This was one of the characteristics of the *old* English hound, whose hearing was very perfect, and whose sense of smell, also, was the most exquisite that can be imagined. M. Cabanis says, the ears of hounds, and other animals designed to hear *low* sounds, (low, as opposed to loud,) are either pendulous or very moveable, to compensate for their difficulty in moving the head.

We have mentioned that these exquisite senses are increased and called into action by discipline. The fox-hound will distinguish the scent of the fox he is pursuing from that of another fox who crosses his path ; the spaniel and terrier will track their masters, by their scent, through a crowded city ; the watch-dog barks when no one else hears a foot fall. Why is this ? These dogs have been accustomed, partly by nature, and partly by education, to regulate their senses by the exercise of attention ; to condense their faculties for the service in which they are engaged ; to direct their capabilities to the one object which is necessary to be attained. They are generally successful ; and their success offers a valuable example to our higher faculties.

In the Tower Menagerie, there is a leash of African blood-hounds belonging to that variety of dog which Linnæus has denominated *sagax*, as indicating a greater intelligence than dogs in general possess. It is impossible to judge of the properties of these individual animals, in the unnatural position in which they are placed. They were brought from Africa by Major Denham, the celebrated traveller ; and that enterprising officer had often employed them in hunting the gazelle, in which chase their exquisite scent, and their extraordinary speed, were displayed to great advantage. They would frequently quit the line of scent, for the purpose of taking a direct instead of a circuitous course, (sportsmen call this cutting off a double,) recovering the scent again with wonderful facility.

This, probably, could only be with the object in view. A dog which loiters by the way, in travelling with his master, will, in the same manner, often make a short cut to overtake him. Dogs are excellent judges of distance : they seldom fail in attempting to leap a ditch or a gate. We have seen a greyhound, in full chase of a hare which ran through a ditch, throw himself over the hedge to be ready for her as she passed out ; and the manœuvre rarely failed of success. This must be considered an effect of reasoning, at any rate ; although we may not go quite so far as Ray, the great English naturalist, who says that dogs judge of distances by an innate operation of trigonometry. Dr. Thomas Brown, one of the most beautiful as well as profound writers on Intellectual Philosophy, considers the existence of reasoning amongst many of the inferior animals to be as unquestionable as the instincts that mingle with it. Montaigne, the most accurate of observers, has recorded a singular instance of their faculty of judging of space:—" I am struck with admiration at the performance, which is nevertheless very common, of those dogs that lead blind beggars in the country, and in cities. I have taken notice how they have stopped at certain doors, where they are wont to receive alms ; how they have avoided the encounter of coaches and carts, even in cases where they have had sufficient room to pass ; and I have seen them, by the trench of a walled town, forsake a plain and even path to take a worse, only to keep their masters further from the ditch. How could a man have made this dog understand that it was his office to look to his master's safety only, and despise his own conveniency to serve him ? And how did he acquire the knowledge, except by a process of reasoning, when the path was broad enough for himself, that it was not so for the blind man ?"* How could a man have made

* Montaigne's Essays, translated by Cotton.

this dog understand ? Here is the real difficulty. Habit certainly does a great deal—but then there must be a beginning of such experiments.

In a work by Jean Faber (*Exposition des Animaux de la Nouvelle Espagne de Hernandez*) there is a very interesting account of the blind beggars of Rome, who are led by their dogs from church to church in that city, and even to places outside of the city walls, such as the Basilica of St. Paul, on the road to Ostia. How does the animal so thoroughly comprehend where his master wishes to go ? Dr. Gall says that dogs "learn to understand not merely separate words or articulate sounds, but whole sentences expressing many ideas." Dr. Elliotson, the learned translator of Blumenbach's Physiology, quotes the following passage from Gall's Treatise, "*Sur les Fonctions du Cerveau*," without expressing any doubt of the circumstance :—"I have often spoken intentionally of objects which might interest my dog, taking care not to mention his name, or make any intonation or gesture which might awaken his attention. He, however, showed no less pleasure or sorrow, as it might be ; and, indeed, manifested by his behaviour that he had perfectly understood the conversation which concerned him. I had taken a bitch from Vienna to Paris ;—in a very short time she comprehended French as well as German, of which I satisfied myself by repeating before her whole sentences in both languages." We have heard an instance of this quickness in the comprehension of language which is very remarkable. A mongrel, between the shepherd's dog and terrier, a great favourite in a farm-house, was standing by while his mistress was washing some of her children. Upon asking a boy, whom she had just dressed, to bring his sister's clothes from the next room, he pouted and hesitated. "Oh, then," said the mother, "Mungo

will fetch them." She said this by way of reproach to the boy, for Mungo had not been accustomed to fetch and carry. But Mungo was intelligent and obedient; and, without further command, he brought the child's frock to his astonished mistress. This was an effort of imagination in Mungo, which dogs certainly possess in a considerable degree. He had often observed, doubtless, the business of dressing the children;—and the instant he was appealed to, he imagined what his mistress wanted. Every one knows the anxiety which dogs feel to go out with their masters, if they have been accustomed so to do. A dog will often anticipate the journey of his owner; and, guessing the road he means to take, steal away to a considerable distance on that road to avoid being detained at home. We have repeatedly seen this circumstance. It is distinctly an effort of the imagination, if, indeed, it be not an inference of reasoning.

The shying of horses has been considered by some as a peculiar defect of sight;—at any rate it is an effect of some false terror. Dogs fill their imagination with vain fears, in the same manner. We have been informed by an intelligent sportsman, that returning home in the dusk with his pointer, the dog all at once skulked behind him, and refused to advance, in spite of his master's threats. Upon looking towards the horizon before him, the sportsman descried what he at first took for a tall man, with a broad hat, extended arms, and a body as thin as a lath. This object, which produced the dog's alarm, was a gigantic thistle, which the gray of the twilight had magnified into fearful dimensions. The vulgar once believed that dogs and horses could see spirits, by their often starting without any apparent cause. Such instances as this of the thistle might have given rise to the superstition.

Linnæus has made it a characteristic of dogs that "they bark at beggars:"—but beggars are ragged.

and sometimes have that look of wildness which squalid poverty produces ; and then the imagination of the dog sees, in the poor mendicant, a robber of his master's house, or one who will be cruel to himself—and he expresses his own fears by a bark. A dog is thus valuable for watching property, in proportion to the ease with which he is alarmed. One of the greatest terrors of a domesticated dog is a naked man, because this is an unaccustomed object. The sense of fear is said to be so great in this situation, that the fiercest dog will not even bark. A tan-yard at Kilmarnock, in Ayrshire, was a few years ago extensively robbed by a thief, who took this method to overcome the courage of a powerful Newfoundland dog, who had long protected a considerable property. The terror which the dog felt at the naked thief was altogether imaginary—for the naked man was less capable of resisting the attack of the dog, than if he had been clothed. But then the dog had no support in his experience. His memory of the past did not come to the aid of that faculty which saw an unknown danger in the future.

The faculties of quadrupeds, like those of men, are of course mixed in their operation. The dog, who watches by his master's grave, and is not tempted away by the caresses of the living, employs both his memory and his imagination in this act of affection. In the year 1827 there was a dog constantly to be seen in St. Bride's Churchyard, Fleet-street, which for two years had refused to leave the place where his master was buried. He did not appear miserable ;—he evidently recollected their old companionship, and he imagined that their friendship would again be renewed. The inhabitants of the houses round the church daily fed the poor creature, and the sexton built him a little kennel. But he would never quit the spot ;—and there he died.

The instances of devoted affection of dogs to their masters are too numerous, and too well known, to require that they should be here repeated. It is a fortunate circumstance connected with this natural attachment of dogs to mankind, that in general they are only considered valuable during their lives ; and their value consists in the qualities which have a tendency to make man gentle and affectionate towards them in return. But this reciprocal friendship is not universal. The natives on the coast of Guinea, and those of the South Sea Islands, eat dogs' flesh ;—there are said to be dog-butchers in China ;—and in Finmark, and other parts of Lapland, dogs are bred, fattened, and slaughtered for their hides.*

The faculty by which animals can communicate their ideas to each other is very striking ; in dogs it is particularly remarkable. There are many curious anecdotes recorded, illustrative of this faculty ; but we prefer giving one from our own knowledge. At Horton, in Buckinghamshire, (a village where Milton passed some of his early days,) about the year 1818, a gentleman from London took possession of a house, the former tenant of which had moved to a farm about half a mile off. The new inmate brought with him a large French poodle, to take the duty of watchman, in the place of a fine Newfoundland dog, which went away with his master : but a puppy of the same breed was left behind ; and he was incessantly persecuted by the poodle. As the puppy grew up, the persecution still continued. At length, he was one day missing for some hours ; but he did not come back alone : he returned with his old friend, the large house-dog, to whom he had made a communication ; and in an instant the two fell upon the unhappy poodle, and killed him before he could be rescued from their fury. In this case, the injuries of the young dog must have been made known to his friend ; a

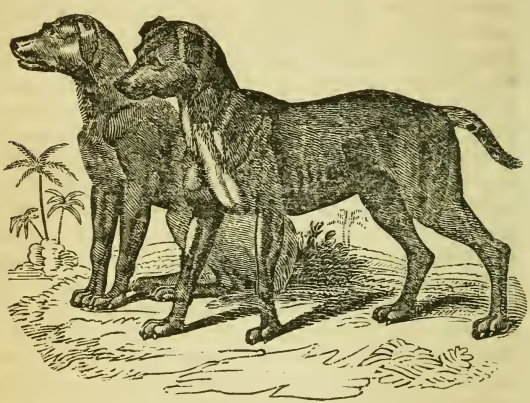
* De Broke's Travels in Lapland.

plan of revenge concerted ; and the determination to carry that plan into effect formed and executed with equal promptitude.

The following story, which illustrates, even in a more singular manner, the communication of ideas between dogs, was told us by a clergyman, as an authentic anecdote :—A surgeon of Leeds, walking in the suburbs of that town, found a little spaniel who had been lamed. He carried the poor animal home, bandaged up his leg, and, after two or three days, turned him out. The dog returned to the surgeon's house every morning, till his leg was perfectly well. At the end of several months, the spaniel again presented himself, in company with another dog, who had also been lamed ; and he intimated, as well as piteous and intelligent looks could intimate, that he desired the same kind assistance to be rendered to his friend, as had been bestowed upon himself. A similar circumstance is stated to have occurred to Moraut, a celebrated French surgeon.

But we are forgetting the African blood-hounds of the Tower Menagerie ; and, in truth, we had no pleasurable recollections of these poor animals. The contrast of their former with their present situation is very painful. From hunting the herds of antelopes over the wide plains of Africa, they have been taken to a close den, where they are evidently restless and miserable. The mastiff, chained up in a kennel, feels that he is useful, and he is therefore happy. Dogs have an instinctive desire of employment ; and they are never so delighted, as when man is cheering them on to some exertion : their reward is the approbation of their masters. But there are these fine creatures shut up in a cage, only to be looked at ; and they feel their captivity and degradation. As is common under similar circumstances, they have no desire to perpetuate their race ; and the female has become very surly and spiteful. They are

exceedingly beautiful dogs ; and it is supposed that the breed, if crossed with our pointers, would greatly improve the variety.



African Blood-hounds.

What is generally called the docility of dogs—the faculty of being taught tricks contrary to their natures, is curious, but far from pleasing : the perfection is generally attained by cruelty. It is more agreeable to witness a natural docility ;—such as that of our own shepherd's dog, who learns to distinguish every sheep of a large flock ; and who will drive them through the crowded streets, with a foresight perfectly wonderful. But our shepherd's dog acts under a rough, and often brutal, drover ; though, perhaps, this brutality naturally arises out of the impediments presented to a kind discharge of his duty, by passengers equally intent upon making their way. The drover and the shepherd are very different persons ; and in gentleness, the drover's dog and the real shepherd's dog are equally unlike. Some of the finest dogs in the world are those which watch the Merino sheep

upon the Spanish mountains. They wear large collars with spikes, to protect them from the attacks of the wolves ; and they conduct their flocks with a gentleness which is only equalled by their courage. When they return to the folds, the dogs bring up the stragglers without violence ; and the man walks at their head, in the true pastoral style, so beautifully described in the Psalms : " The Lord is my shepherd ; I shall not want. He maketh me to lie down in green pastures ; he *leadeth* me beside the still waters."

The dog, as well as most other animals, indicates his different feelings by different tones of his voice ; and thus the shepherd's dog has a command over his flock without using positive violence. Their tones are so marked that they are recognised, as expressive of anger or fear, by other animals. The horse knows from the bark of a dog when he may expect an attack upon his heels. The author of Waverley alludes to this dread which horses have of angry dogs, when he quotes the ridiculous story of a French tourist in Scotland, that the State maintained in each village a relay of curs, called colleys, whose duty it was to chase the post-horses (too starved and exhausted to move without such a stimulus) from one hamlet to another, till the annoyance thus produced drove the wretched animals to the end of their stage.

The practice of teaching dogs tricks is as old as the Romans. Montaigne has quoted from Plutarch the following account of a *wonderful* dog of antiquity : " Plutarch says he saw a dog at Rome, at the theatre of Marcellus, which performed most extraordinary feats, taking his part in a farce which was played before the Emperor Vespasian. Amongst other things, he counterfeited himself dead, after having feigned to eat a certain drug, by swallowing a piece of bread. At first, he began to tremble and stagger, as if he were astonished ; and, at length,

stretching himself out stiff, as if he had been dead, he suffered himself to be drawn and dragged from place to place, as it was his part to do ; but afterwards, when he knew it to be time, he began first gently to stir, as if newly awaked out of some profound sleep, and lifting up his head, looked about him, after such a manner as astonished all the spectators." There was even a more curious exhibition of this description at Paris, in 1817. The English were accustomed to employ this docility to some advantage in their domestic arrangements ; but the race of Turnspits, a long-backed, short-legged dog, has ceased to exist, except as an occasional curiosity. Machinery has here superseded animal power, as in many other cases. Asses are seldom, now, put to walk in a wheel to raise water, as we have seen at Carisbrook Castle, in the Isle of Wight. The dancing dogs of the showman, too, are almost extinct ; though, now and then, his pipe and tabor are heard in some obscure street of London ; and boys gather around to wonder at the sight of dogs turning a spinning-wheel, and dancing a cotillion; and they think of the story of "Mother Hubbard" as a profound truth in natural history.

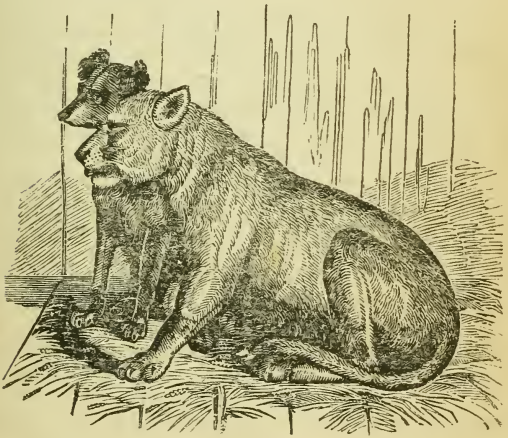
We have alluded in Chapter II. to those exhibitions of remarkable attachment between animals of opposite natures, which are sometimes so interesting in menageries. These attachments are more frequent with dogs than with other animals—probably because they are more capable of attachment. The friendship between dogs and horses is too common to attract notice; but every now and then we hear of an attachment where we might have expected an antipathy. Dr. Fleming, in his interesting book "The Philosophy of Zoology," quotes from Montague's supplement to his Ornithological Dictionary, the following account of a singular friendship which subsisted between a China goose, and a pointer, who had killed the gander. "Ponto (for that was the dog's name) was most severely punished for the misdemeanour, and had the dead bird tied to his neck. The solitary goose became extremely distressed for the loss of her partner and only companion; and, probably, having been attracted to the dog's kennel by the sight of her dead mate, she seemed determined to persecute Ponto by her constant attendance and continual vociferations; but after a little time a strict amity and friendship subsisted between these incongruous animals. They fed out of the same trough, lived under the same roof, and in the same straw-bed kept each other warm; and when the dog was taken to the field, the inharmonious lamentations of the goose for the absence of her friend were incessant."

We have one anecdote of a similar nature to add, from our own observation. We recorded the circumstance as follows, at the time when it was made known to us in 1823. We were lately visiting in a house where a very pleasing and singular portrait attracted our observation: it was that of a young lady represented with a partridge perched upon her

shoulder, and a dog with his feet on her arm. We recognised it as a representation of the lady of the house, but were at a loss to account for the odd association of her companions. She observed our surprise, and at once gave the history of the bird and the spaniel. They were both, some years back, domesticated in her family. The dog was an old parlour favourite who went by the name of Tom. The partridge was more recently introduced from France, and answered to the equally familiar name of Bill. It was rather a dangerous experiment to place them together, for Tom was a lively and spirited creature, very apt to torment the cats, and to bark at any object which roused his instinct. But the experiment was tried ; and Bill, being very tame, did not feel much alarm at his natural enemy. They were, of course, shy at first, but this shyness gradually wore off : the bird became less timid, and the dog less bold. The most perfect friendship was at length established between them. When the hour of dinner arrived, the partridge invariably flew on his mistress's shoulder, calling with that shrill note which is so well known to sportsmen ; and the spaniel leapt about with equal ardour. One dish of bread and milk was placed on the floor, out of which the spaniel and bird fed together ; and after their social meal, the dog would retire to a corner to sleep, while the partridge would nestle between his legs, and never stir till his favourite awoke. Whenever the dog accompanied his mistress out, the bird displayed the utmost disquietude till his return ; and once, when the partridge was shut up by accident during a whole day, the dog searched about the house with a mournful cry which indicated the strength of his affection. The friendship of Tom and Bill was at length fatally terminated. The beautiful little dog was stolen ; and the bird from that time refused all

food, and died on the seventh day, a victim to his grief.

The stories of attachment between lions and dogs are well authenticated ; and in several instances the stronger animal has afforded a protection to his trembling victim, which has ripened into friendship. In a well-regulated travelling menagerie, belonging to a person named Atkins, we saw, in the autumn of 1823, a spaniel-bitch, affording sustenance to a young tiger who was sick, and not expected to live, and whom she evidently tended with affectionate solicitude. The following cut is a representation of this singular pair.



We cannot quit the subject of dogs without adverting to that lamentable circumstance, their occasional madness. This disease is not common to dogs in all climates ; according to Mr. Barrow, canine madness

is unknown in South Africa. Other temporary diseases are oftentimes mistaken for this fearful malady; and we, therefore, subjoin the symptoms of hydrophobia, as described by MM. Chaussier and Orfila, who have written a scientific work on this disorder :—

"A dog at the commencement of madness is sick, languishing, and more dull than usual. He seeks obscurity, remains in a corner, does not bark, but growls continually at strangers, and, without any apparent cause, refuses to eat or drink. His gait is unsteady, nearly resembling that of a man almost asleep. At the end of three or four days, he abandons his dwelling, roving continually in every direction : he walks or runs as if tipsy, and frequently falls. His hair is bristled up ; his eyes haggard, fixed, and sparkling ; his head hangs down ; his mouth is open and full of frothy slaver ; his tongue hangs out ; and his tail between his legs. He has, for the most part, but *not always*, a horror of water, the sight of which seems, generally, to redouble his sufferings. He experiences from time to time transports of fury, and endeavours to bite every object which presents itself, not even excepting his master, whom indeed he begins not to recognise. Light and lively colours greatly increase his rage. At the end of thirty or thirty-six hours he dies in convulsions." After various remedies for this terrible malady have been tried in vain, it seems now agreed that cutting or burning out the bitten part is the only one to be relied on.

The very extensive varieties of the dog, which have been produced by domestication and other causes, have led naturalists into great differences of opinion, as to the original stock from which these varieties have sprung. Wild dogs, as they are at present found, are, in most cases, dogs without masters ;

living in a miserable condition, away from human society, and easily won back to its subjection and its comforts : these, therefore, do not advance our inquiries as to the original type of the species in a state of nature. Some think the dog is a jackal, some a wolf. In the character of erect ears, many of our domestic dogs nearly resemble the half-reclaimed varieties, such as the Esquimaux ; and again, others, in the shape of the head, approach more nearly to the Australasian dog, which has been lately considered as retaining most of the probable distinctive characters of the wild and original stock. M. Frederic Cuvier has directed much attention to this subject ; and he has constructed a list of dogs, arranged, as he conceives, in the order of their approach to the parent stock, as far as that can be determined by the shape of the head, and the length of the jaws and muzzle. We subjoin this arrangement, which varies greatly from that of Buffon, and certainly appears much more natural and reasonable.

All the varieties of the dog, according to M. F. Cuvier, may be divided into three groups, viz. :—

I. Matins.
II. Spaniels.
III. Dogues.

I. Matins.—The anatomical character of this group is,—the head more or less elongated ; the parietal bones insensibly approaching each other ; and the condyles of the lower jaw placed in a horizontal line with the upper cheek teeth.

Var. A.—Dog of New Holland.—*Canis fam. Australasiæ*, Desmarest ; *Dingo*, Shaw.

Var. B.—French Matin.—*Canis fam. laniarius*, Linnæus ; *Matin*, Buffon.

(According to Buffon, this dog, a native of temperate climates, becomes the Danish dog, when carried to the north, and the greyhound, when under the influence of a southern climate.)

Var. C.—Danish Dog.—*Can. fam. danicus*, Desmarest ; *Grand Danois*, Buffon.

Var. D.—Greyhound.—*Canis graius*, Linnæus ; *Lévrier*, Buffon.

This variety includes the following *sub-varieties* :—

a. Irish Greyhound.
b. Scotch Greyhound.
c. Russian Greyhound.
d. Italian Greyhound.
e. Turkish Greyhound.

(The Italian and the Turkish greyhounds are alike in the great timidity of their dispositions, and their constant trembling, proceeding, probably, from excessive sensibility. The common greyhound is feelingly alive to caresses ; and the motions of his heart, when noticed, are most violent and irregular.)

The *Albanian* dog, a very celebrated species described by many historians, belongs to this group.

II. Spaniels.—The head very moderately elongated ; the parietal bones do not approach each other above the temples, but diverge and swell out so as to enlarge the forehead and the cerebral cavity. This group includes the most useful and intelligent of dogs.

Var. E.—Spaniel.—*Canis fam. extrarius*, Linnæus.

(The name of this race is derived from its original country, Spain ;—thence Epagneul, French ; Spaniel, English.)

Sub-varieties :—

a. The smaller Spaniel.
b. King Charles's Spaniel.—*Canis brevipilis*, Linnæus.

c. *Le Pyrame*, BUFFON.—(There is no English name for this kind.)

d. The Maltese Dog.—*Bichon*, BUFFON.

e. The Lion Dog.—*Canis leoninus*, LINN.

f. The Calabrian Dog.

Var. F.—The Water Spaniel.—*Canis aquaticus*, LINNÆUS; *Chien barbet*, BUFFON.

Sub-varieties :—

a. Small Water Spaniel.—*Petit barbet*, BUFFON.

(According to Buffon and Daubenton, this is considered the offspring of the great water dog and the little spaniel.)

b. *Chien Griffon.*—(This is a sub-variety between the water spaniel and shepherd's dog.)

Var. G.—The Hound.—*Chien courant*, BUFFON; *Canis sagax*, LINNÆUS.

(This is essentially the same as the blood-hound. The fox-hound is a smaller variety, and the harrier a still smaller. The beagle is a particular breed of the harrier. The "Talbot" is an old English name for all the varieties of the hound.)

Var. H.—The Pointer.—*Canis avicularius*, LINNÆUS.

Sub-varieties :—

a. Dalmatian Pointer.—*Braque de Bengal*, BUFFON.

Var. I.—Turnspit.—*Canis fam. vertagus*, LINNÆUS.

(There are two sub-varieties, one with the fore legs straight, the other crooked.)

Var. K.—Shepherd's Dog.—*Canis fam. domesticus*, LINNÆUS.

Var. L.—Wolf Dog.—*Canis pomeranus*, LINNÆUS.

Var. M.—Siberian Dog.—*Canis sibiricus*, LINNÆUS.

Var. N.—Esquimaux Dog.—*Canis fam. borealis*, DESMAREST.

Var. O.—The Alco.

In group II. ought to be included—

The Alpine Spaniel.
The Newfoundland Dog.
The Setter.
The Terrier.

These are omitted by M. F. Cuvier ; but the two first are alluded to in a note by M. Desmarest in his "Mammalogie." The French call the various mongrel breeds *chiens de rue*—dogs of the street.

III. Dogues.—The muzzle more or less shortened; the skull high ; the frontal sinuses considerable ; the condyle of the lower jaw extending above the line of the upper cheek teeth. The cranium is smaller in this group than in the two previous, owing to the formation of the head.

Var. P.—Bull Dog.—*Canis fam. molossus*, Linnæus.

Sub-variety.—Dog of Thibet.

Var. Q.—The Mastiff.—*Canis fam. anglicus*, Linnæus.

Var. R.—The Pug Dog.—*Le doguin*, Buffon.

Var. S.—The Iceland Dog.—*Canis fam. islandicus*, Linnæus.

Var. T.—Little Danish Dog.—*Canis fam. variegatus*, Linnæus.

(When spotted with black on a white ground it is called the Harlequin Dog. Notwithstanding the name, there is no resemblance of form between this and the Danish Dog, *var.* C.)

Var. U.—Bastard Pug.—*Chien roquet*, Buffon.

Var. V.—*Canis fam. britannicus*, Desmarest.—A variety between the little Danish dog and the Pyrame.

Var. X.—Artois Dog, an extinct variety of the *Canis fam. fricator* of Linnæus.

Var. Y.—Dog of Andalusia, sometimes called the Dog of Cayenne.

Var. Z.—Barbary Dog.—*Chien turc*, BUFFON; *Canis fam. ægyptius*, LINNÆUS.

(There are two varieties ; one quite naked, the other with a mane.)

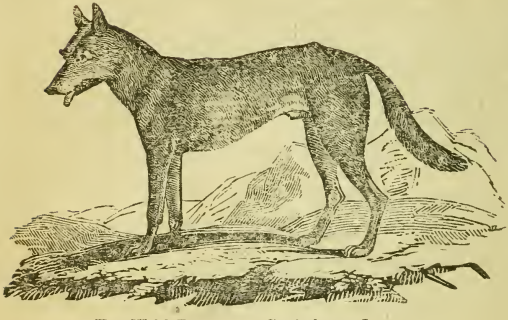
Dr. Caius, a naturalist of the seventeenth century, wrote a Latin Treatise on British Dogs, of which he mentions the following varieties:—Terrare (from terrarius,) Harier, Bludhunde, Gasehunde, Grehunde, Leviner or Lyemmer, Tumbler, Spainel, Setter, Water-Spainel or Fynder, Spainel-gentle or Comforter, Shepherd's Dog, Mastive or Bande-dog, Wappe, Turnspit, Dancer.

The Domestic Dog is scientifically distinguished from the other varieties of the species Canis, by having its tail curved upwards. Whenever there is white on any part of the tail of the Domestic Dog, the *tip* is invariably white.

The dog, whelped with his eyes closed, opens them on the tenth or twelfth day. His teeth begin to change in the fourth month. His growth terminates at two years ; and he is old at five. His life rarely exceeds twenty years. The female goes with young sixty-three days.

Chapter IV.

THE WOLF, THE JACKAL, AND THE FOX.



The Wolf, Pennant; *Canis lupus*, Linnæus.

In the garden of the Zoological Society there are three young wolves, a pair of which came from Normandy. The height of the specimen from which the above representation was taken was twenty-six inches, in September, 1828. These animals are here confined in a manner which enables the observer to judge better of their habits than in the ordinary dens of the menageries. They have a roomy kennel to feed and sleep in; and a sort of outer cage, made of strong bars of iron rising from the ground, and forming an arch, sufficiently large to enable them to chase each other about with considerable freedom: their play is, however, extremely rough; and they often bite with great violence. Upon the whole, they appear good-tempered. We observed

a gentleman, somewhat imprudently, thrust his hand into the cage, upon which they all licked it, fawning like dogs.

The essential character of the common wolf consists in,—a straight tail ; the hide of a grayish yellow, with a black oblique stripe on the fore-legs of those which are full grown ; the eyes oblique. The average height of the wolf is about two feet, six inches before, and two feet, four inches behind ; and the length of the body, from the tip of the muzzle to the beginning of the tail, three feet, eight inches. The cubs of the wolf are born with their eyes shut : the female goes with young sixty-three days, and has eight or nine at a litter ; in these respects exactly resembling the dog.* The average duration of their life is from fifteen to twenty years.

The gentleness of wolves in confinement seldom continues after they are full grown : they generally appear to acquire a fear instead of a love of man, which manifests itself in a morose and vindictive impatience. The cowardly ferocity of their natures is with difficulty restrained by discipline : they are not to be trusted. And yet there are instances of wolves having been domesticated to such an extent, as to exhibit the greatest attachment to man—as great as can be shewn by a dog. M. F. Cuvier gives a very interesting account of a tame wolf, which had all the obedience towards, and affection for, his master, that the most sagacious and gentle of domestic dogs could possibly evince. He was brought up in the same manner as a puppy, and continued with his original owner till he was full grown. He was then presented to the Menagerie at Paris. For many weeks he was

* The period of gestation in the wolf is inaccurately stated in Goldsmith's "Animated Nature ; "and from the *supposed* difference in this particular between the dog and the wolf, an inference is drawn, that they are essentially a different species.

quite disconsolate at the separation from his master, who had been obliged to travel; he would scarcely take any food; and was indifferent to his keepers. At length he became attached to those about him, and he seemed to have forgotten his old affections. His master returned, after an absence of eighteen months: the wolf heard his voice amidst the crowd in the gardens of the Menagerie, and, being set at liberty, displayed the most violent joy. Again was he separated from his friend; and again was his grief as extreme as on the first occasion. After three years' absence, his master once more returned. It was evening, and the wolf's den was shut up from any external observation; yet the instant the man's voice was heard, the faithful animal set up the most anxious cries; and the door of his cage being opened, he rushed towards his friend—leaped upon his shoulders—licked his face—and threatened to bite his keepers, when they attempted to separate them. When the man left him, he fell sick, and refused all food; and from the time of his recovery, which was long very doubtful, it was always dangerous for a stranger to approach him. He appeared as if he scorned any new friendships.

This is a very remarkable, and, as far as we know, a solitary instance of the wolf possessing the generous, constant, unshaken attachment of the dog to any individual of the human species. And yet the paucity of these instances may be attributed to our imperfect knowledge of the history of the domestication of the dog-tribe. In the individual animal described by M. F. Cuvier, the progress was very clear, from a state of savage fierceness to a state of docility and extraordinary sensibility. This wolf was taken young; brought up with human beings; cherished by one in particular; never suffered to have his ferocity excited by a want of food; and supplied with every neces-

sary, as well as caressed, by the person with whom he had especially become familiar. It is very rarely that such an experiment can be tried ; for the inhabitants of Europe, for the last thousand years at least, have been labouring, with unceasing anxiety, to extirpate the whole race of wolves. The Esquimaux dogs, which we have described in Chapter III., are probably wolves in a state of domestication ; but neither the date of their domestication, nor the manner in which it has been effected, could be satisfactorily determined, even if the fact of the identity of the species were completely established. That there is an essential difference in the characters, though little or none in the physical structures, of wolves, properly so called, and of dogs in the wildest state, (that is, in the state in which they most nearly resemble wolves,) is beyond a doubt. They are natural foes : the Esquimaux dogs set up a fearful howl at the approach of a wolf to their huts ; and yet, in their outward appearance, these animals are exceedingly alike. Captain Parry, in the Journal of his Second Voyage, says, " a flock of thirteen wolves, the first yet seen, crossed the ice in the bay, from the direction of the huts, and passed near the ships. These animals, as we afterwards learned, had accompanied, or closely followed, the Esquimaux on their journey to the island the preceding day ; and they proved to us the most troublesome part of their suite. They so much resemble the Esquimaux dogs, that, had it not been for some doubt amongst the officers who had seen them, whether they were so or not, and the consequent fear of doing these poor people an irreparable injury, we might have killed most of them the same evening, for they came boldly to look for food within a few yards of the *Fury*, and remained there for sometime." Again he says, in his journal five days after, " these animals were so hungry and fearless, as *to take away*

some of the Esquimaux dogs in a snow-house near the *Hecla's* stern, though the men were at the time within a few yards of them." Thus we see that there is an essential difference of character between the Esquimaux dog and wolf, which has rendered the one the natural enemy of the other ; although their physical resemblance be so close, as to present no essential variation to an ordinary observer. This difference of character is probably to be found, in a great degree, in the effect of hereditary habit. We have other instances of the disposition which wolves have to make the dog their prey. Captain Parry, in a subsequent passage of the same journal, mentions that a Newfoundland dog belonging to one of the Discovery ships, being enticed to play with some wolves, who were prowling upon the ice, would have been carried off by them, had not the sailors gone in a body to his rescue. In Broke's Travels we find the following curious circumstances recorded, as happening in the north of Sweden :—" I observed, on setting out from Sormjöle, the last post, that the peasant who drove my sledge was armed with a cutlass ; and, on enquiring the reason, was told that, the day preceding, while he was passing in his sledge the part of the forest we were then in, he had encountered a wolf, which was so daring, that it actually sprung over the hinder part of the sledge he was driving, and attempted to carry off a small dog which was sitting behind him. During my journey from Tornea to Stockholm, I heard everywhere of the ravages committed by wolves, not upon the human species or the cattle, but chiefly upon the peasants' dogs, considerable numbers of which had been devoured. I was told, that these were the favourite prey of this animal ; and that, in order to seize upon them with the greater ease, it puts itself into a crouching posture, and begins to play several antic tricks, to

attract the attention of the poor dog, which, caught by these seeming demonstrations of friendship, and fancying it to be one of his own species, from the similarity, advances towards it to join in the gambols, and is carried off by its treacherous enemy. Several peasants that I conversed with mentioned their having been eye-witnesses of this circumstance." Nor is the animosity of the dog to the wolf less than that of the wolf to the dog. Associated in packs, and encouraged by men, dogs will chase the wolf with the most daring ardour, regardless of his greater physical strength; and, probably, without the aid of dogs, they would never have been exterminated in these kingdoms.

The wolf is peculiarly an inhabitant of Europe, and he still continues so in the more northern regions, and in those countries where dense forests are not yet cleared. They once abounded in this country; and it is manifest that the terror which they produced was not a rare circumstance, but spread itself throughout all the land, and became a part of the habitual thoughts of the people. The month which corresponds with our January was at one period called by the Anglo-Saxons, "Wolf-monat;" and the reason for this is thus explained by an old writer on British antiquities. "The moneth which we now call January they called 'Wolf-monat,' to wit, Wolf moneth, because people are wont always in that moneth to be more in danger to be devoured of wolves, than in any season els of the yeare; for that, through the extremity of cold and snow, those ravenous creatures could not find of other beasts sufficient to feed upon."* The natural terror which the wolves inspired amongst the scat-

* Verstegan's "Restitution of decayed Intelligence in Antiquities concerning the most noble and renowned English Nation." Antwerp, 1605.

tered inhabitants of the half-cultivated lands of England was increased by their habitual superstitions. The same author, in his chapter "on the Antiquitie and Proprietie of the ancient English tongue," says, "*Were-wulf:* this name remaineth still known in the Teutonic, and is as much to say as man-wolf—the Greek expressing the very like in Lycanthropos. The *were-wolves* are certain sorcerers, who, having anointed their bodies with an ointment which they make by the instinct of the devil, and putting on a certain inchanted girdel, do not only unto the view of others seem as wolves, but to their own thinking have both the shape and nature of wolves, so long as they weare the said girdel; and they do dispose themselves as very wolves in wurrying and killing, and waste of humane creatures." The Germans had a similar superstition; and, as late as 1589, a man was executed in the Netherlands under the charge of being a were-wulf. This pretended sorcerer, assuming one of the most formidable shapes of mischief, was called, in France, *loup-garou*. It is said that the wolf, when it has once tasted human flesh, gives it the preference over all other animal food; and from this cause it probably arose that, for many centuries of ignorance, when the influence of evil spirits was universally believed, and the powers of witchcraft were not doubted even by the learned, a raging wolf, devouring every thing in his way—the sheep in its fold, and the child in its cottage bed,—and even digging up newly buried bodies from their graves, should be supposed to be possessed with some demon more fearful than its own insatiate appetites. It is to the terror, also, which the wolf inspired, that we are to ascribe the fact of kings and rulers, in a barbarous age, feeling proud of bearing the name of this animal, as an attribute of courage and ferocity. Brute power was then con-

sidered the highest distinction of man ; and the sentiment was not mitigated by those refinements of modern life which conceal, but do not destroy it. We thus find, amongst our Anglo-Saxon kings, and great men, Æthelwulf, the noble wolf; Berthwulf, the illustrious wolf; Eadwulf, the prosperous wolf; Ealdwulf, the old wolf.

The wolf was extirpated much earlier in England than in any other country of Europe. King Edgar, in the tenth century, according to the ancient chronicles, "tooke order for the destroying them throughout the whole realm." The Welsh paid tribute to Edgar, which he commuted for three hundred wolves' heads. Malmsbury says the tribute ceased on the fourth year, for want of wolves. It would appear from the writings of William Fitz-Stephen, the secretary of Thomas-à-Becket, that wolves did not exist in the great forest to the north of London, for he makes no mention of them in his account of it. "On the north are corn fields, pastures, and delightful meadows, intermixed with pleasant streams, on which stands many a mill, whose clack is so grateful to the ear. Beyond them an immense forest extends itself, beautified with woods and groves, and full of the lairs and coverts of beasts and game,—stag, bucks, boars, and wild bulls."* Wolves were found sufficiently numerous at a later period again to demand the attention of the government ; for Edward I., in the thirteenth century, issued his edict to "Maister Peter Corbet" to superintend their destruction. After this period we hear nothing of wolves in English history. Hollingshed mentions that, in 1577, wolves were very destructive to the flocks in Scotland ; and it is said that the last of this

* "Descriptio nobilissimæ Civitatis Lundoniæ ;" a prologue of William Fitz-Stephen to his Life of Thomas-à-Becket, translated by Dr. Pegge.

ferocious race perished in Lochaber, by the hand of Sir Ewen Cameron, about a century afterwards. They were exterminated in Ireland at the beginning of the last century.

In the southern and temperate countries of Europe wolves are now rarely found. In severe winters they sometimes make their appearance in France and Germany; several were seen in the forests near Boulogne, in 1818. In Spain, the dogs who watch the flocks wear spiked collars, as we have before mentioned, to protect them from the occasional incursions of their enemy. We must refer to the accounts of travellers in the northern parts of Europe and of America, for any notice of the appearance of these animals in considerable numbers. Wolves are, in those northern regions, very formidable creatures, sometimes measuring six feet from the muzzle to the end of the tail.*

Their prevailing colour is light, with a silvery, black stripe, extending from the upper part of the neck along the back. In the Zoological Appendix, by Mr. Sabine, to Captain Franklin's "Narrative of a Journey to the Shores of the Polar Sea," mention is made of a white wolf, whose length was four feet two inches; length of tail, nineteen inches; and height, two feet ten inches. Mr. Sabine considers it probable, that the loss of colour in the white wolves, in the vicinity of the Arctic Seas, is occasioned by the severity of the winter season; though the change does not occur in all cases. We have mentioned the changes of colour in many of the polar animals in Chap. III., p. 51. Desmarest, though he admits this change, notices the white wolf as a variety belonging to the description of animals called *Albinoes*.

The peculiar whiteness of the hair or feathers to which albinoes are subject, and which occurs not only

* Broke's Travels.

in quadrupeds and birds, but in the human race, is occasioned by a defect in the colouring matter of these coverings of the skin, and is always connected with a defect in sight, which arises from the deficiency in the eye of what is called the mucous pigment. Blumenbach thinks that this deficiency is hereditary in some of the mammalia, so as to form a constant breed of white animals, as in the rabbit, mouse, and horse; and that, in the same way, the ferret, whose white skin and red *glassy* eyes are well known, is descended from the polecat.* The subject of albinoes is intimately connected with some curious facts which have been recently investigated; and which completely prove the intimate connection between, or rather identity of, that substance which gives colour to the skin and hair, and that which regulates the ability of the animal to endure a greater or less degree of light.

From a series of experiments instituted to ascertain the power of the sun's rays, it has been established, by Sir Everard Home, that although the absolute heat, in consequence of the absorption of the rays, is greater from a black surface, yet the power of the rays to scorch the skin is thus destroyed—according to Sir Humphry Davy, by being converted into sensible heat by the absorption. It is thus that the negro has a provision for the defence of his skin, while living within the tropics; and in the same manner, his eye, which is exposed to strong light, has the mucous pigment darker than that of the European.† In all quadrupeds which look upwards, as the monkey; in birds exposed to the sun's rays; and in fishes which lie upon the surface of the ocean, this pigment is dark. In ruminating animals, which look

* Blumenbach's Comparative Anatomy, translated by Lawrence and Coulson.

† Home's Lectures on Comparative Anatomy, vol. iii.

downwards, and in nocturnal animals, such as the cat, it is light; in the owl, it is entirely absent. In the Supplement recently published to his Lectures on Comparative Anatomy, Sir Everard Home has collected some further facts on this interesting subject. He says that the "*rete mucosum*," a kind of pigment which lines the cuticle upon the surface of the body, and constitutes the tubular cavity that forms hair, is precisely the same substance as that upon which the retina of the eye is spread (which we have called the mucous pigment;) and thus, being acted upon by the same circumstances, when the hair becomes gray, the person can only see with a weak light. Baron Larrey mentioned to Sir Everard Home the case of a man who had been confined at Brest thirty-three years, in a subterraneous prison. During the day, he was completely blind, and only saw objects in the dark. His hair was absolutely blanched; and when it first became white, the pigment of his eyes had undergone the same change. With regard to the subject which led us to these curious facts—the white animals of the most northern climates—Sir Everard Home unhesitatingly says, that the shedding of the hair and feathers in the Arctic regions, during the six months in which they are not visited by the sun, *is accompanied by the absence of the* "*nigrum pigmentum*," (the black pigment,) by which the animals and birds are fitted to see with the weak light afforded them.* With these facts before us, it may reasonably be believed that many of the white animals of the Arctic regions are, during a portion of the year, when the cold is intense and the days are dark, what are called albinoes—that is, that with the change of the colour of their hair, the mucous pigment of the eye also changes colour; or, in other words, that the black pigment is absent when the hair periodically becomes

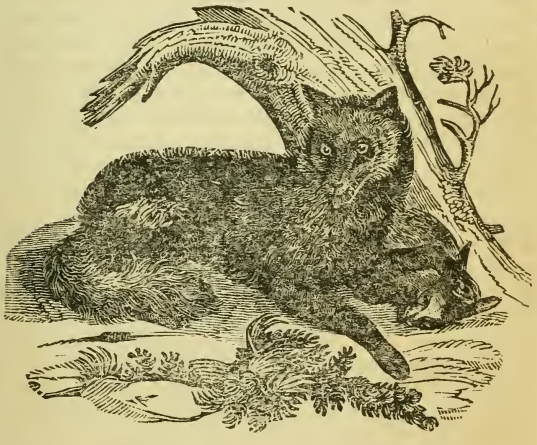
* Supplement to Lectures, vol. v., p. 282. 1828.

white We have already seen how this whiteness of the fur enables the animal to bear the diminished temperature, without such a diminution of the warmth of his body as would deprive him of his physical powers; and upon the same beautiful principle of arrangement by an all-wise Providence, which so nicely adjusts the senses and faculties of animals to the situations in which they are placed, the deficiency of the black pigment of the eye enables some quadrupeds to see distinctly in the faint light of the long Arctic winter. Upon this principle, M. Desmarest's description of the white wolf, "an animal affected with the albino disease," is an incorrect one. He is an animal the colour of whose fur, as well as the pigment of whose eye, undergoes a change to fit him for the very extraordinary changes of heat and light he is exposed to; and which change of the fur and the eye prevents him utterly perishing, during that incapacity to procure his food which extreme cold and darkness would otherwise bring upon him. It is remarkable, that these extraordinary adaptations of the body to climate are confined to the inferior animals. Man is not affected by them to any thing like the same extent; for the colour of the negro's skin is unvarying in certain latitudes, and the albinoes of the human race are so from the effect of disease. We may conclude, from this circumstance, that man, in the cases of adaptation to climate, as in all other cases, is left to derive his protection against physical evils from the exercise of his own reason. The poor Esquimaux, during their intense winters, clothe themselves with thick furs, shut themselves up in a snow hut, (the warmest of coverings from the external air,) make fires, and obtain light from oil. Man, therefore, has a defence, in his superior intelligence, against the rigours of climate, even in the most exposed situations. He is left to the unaided care of

this intelligence, without that special intervention of Providence, which makes such arrangements for the preservation of the inferior animals as shall come to the aid of their instinct, and stand in the place of those comforts, which may be obtained by the higher faculties of the human race. Man, for instance, is the only animal that can produce artificial light and heat. He makes a fire in the woods, and the monkeys will warm themselves at it ; but no monkey ever yet succeeded in kindling a fire himself. As man advances in civilization, these broad distinctions may be overlooked, in the elaborate contrivances by which he heaps up every comfort and luxury around him,—by manufactures and commerce ensuring the possession of them, in various degrees, to all of the human race. But the ability to construct a steam-engine, and the knowledge which shews how to kindle the fuel which sets that machine in motion, are equally results of the superior intellect of man, as distinguished from the faculties of the creatures beneath him. "Consider the lilies of the field, how they grow ; they toil not, neither do they spin." The lilies of the field derive their exceeding beauty, without an effort, from the hand of the God of Nature ; but the same God ordains the toiling and spinning for man, to enable him to preserve that place in the creation to which he is destined—the head of all beings which inhabit this earth,—by the constant and progressive exercise of his reasoning faculties, and by the employment of that knowledge which, from the accumulated experience of past generations, constitutes the power of civilization.

In the southern states of America, according to Mr. Warden, the Black Wolf is found. This is, probably, not exactly the variety which is called *Canis lycaon*, and of which the Menagerie of Paris had formerly two specimens, which were captured in the Pyrenees. A black wolf was taken in the Missouri

territory, by a party engaged in Major Long's expedition from Pittsburg to the Rocky Mountains ; and Mr. Say, who accompanied that expedition, has described it under the name of *Canis nubilus*, or *Clouded Wolf*. In the Menagerie of the Tower of London, there is, at present, a pair of wolves, taken in America, and presented by the Hudson's Bay Company, whose hair is of that mottled or clouded colour, formed of various shades of black, gray, or white, which determined Mr. Say in his choice of a name for the variety.



The Clouded Wolf ; Canis nubilus, Say.

These animals are larger and stronger than the common wolf; of a fierce aspect, but, in a considerable degree, without that peculiar expression—that sinister look of apprehension, united with ferocity—which usually characterises the wolf species. Their tail is shorter than that of the common wolf, and their

ears are remarkably short. These individual animals are extremely voracious ; and their natural fierceness has not been in the slightest degree changed by confinement. The head of the American wolf, generally, is larger than that of the European ; the muzzle is rounder ; and his expression has less of that character which is expressed by the common word *slinking*.

Of the habits of the wolves of America, in which part of the world there are several varieties, we have now very accurate descriptions by intelligent and daring travellers. From those narratives, we may form some tolerable idea of the pest which formerly existed in our own country, before their extirpation. During the arduous journies of Captain Franklin to the shores of the Polar Sea, he and his companions were often obliged to dispute their scanty food with the prowling wolves of those inclement regions. On one occasion, when they had captured a moose-deer, and had buried a part of the body, the wolves absolutely dug it out from their very feet, and devoured it, while the weary men were sleeping. On another occasion, when the travellers had killed a deer, they saw, by the flashes of the Aurora Borealis, eight wolves waiting around for their share of the prey ; and the intense howling of the ferocious animals, and the cracking of the ice by which they were surrounded, prevented them from sleeping even if they had dared. But the wolves were sometimes caterers for the hungry wanderers in these dreary regions. When a group of wolves and a flight of crows were discovered, the travellers knew that there was a carcase to be divided; and they sometimes succeeded in obtaining a share of the prey, if it had been recently killed. Even the wolves have a fear of man ; and they would fly before the little band, without attempting resistance. The following anecdote is full of interest :—" Dr. Richardson, having the first watch, had gone to the summit of the hill and remained seated, contemplating

the river that washed the precipice under his feet, long after dusk had hid distant objects from his view. His thoughts were, perhaps, far distant from the surrounding scenery, when he was roused by an indistinct noise behind him ; and, on looking round, perceived that nine white wolves had ranged themselves in form of a crescent, and were advancing, apparently with the intention of driving him into the river. On his rising up, they halted ; and when he advanced, they made way for his passage down to the tents." This circumstance happened when the weather was sultry. The formation of a crescent is the mode generally adopted by a pack of wolves to prevent the escape of any animal which they chase.

The following passage, from the same interesting work, shews the extreme cunning of the wolves in the pursuit of a creature of superior speed :—" So much snow had fallen on the night of the 24th, that the track we intended to follow was completely covered ; and our march to-day was very fatiguing. We passed the remains of two red deer, lying at the bases of perpendicular cliffs, from the summits of which they had probably been forced by the wolves. These voracious animals, who are inferior in speed to the moose, or red deer, are said frequently to have recourse to this expedient, in places where extensive plains are bounded by precipitous cliffs. Whilst the deer are quietly grazing, the wolves assemble in great numbers ; and, forming a crescent, creep slowly towards the herd, so as not to alarm them much at first ; but when they perceive that they have fairly hemmed in the unsuspecting creatures, and cut off their retreat across the plain, they move more quickly, and with hideous yells terrify their prey, and urge them to flight by the only open way, which is towards the precipice ; appearing to know that, when the herd is once at full speed, it is easily driven over the cliff—the rearmost urging on those that are before.

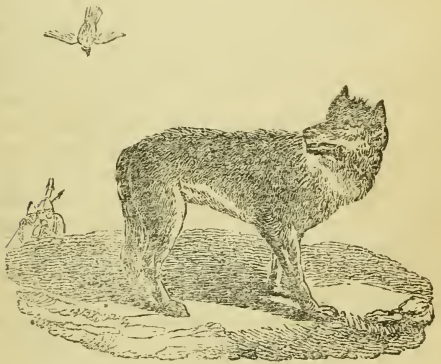
The wolves then descend at their leisure, and feast on the mangled carcases."

Ferocious as the wolf of all countries is in the chase of weaker animals, he is ever extremely apprehensive for his own safety. In North America, a bladder hung upon a pole, and blown about by the wind, will deter him from molesting the numerous herds of buffaloes. He is in continual dread of being entrapped to his destruction. He will always attack a rein-deer when loose ; but if the animal is tied to a stake, he fears to approach, considering that a pitfall is near, and that the deer is placed there to entice him to it. The Esquimaux, however, often take him in a trap made of ice, at one end of which is a door of the same abundant material, fitted to slide up and down in a groove ; to the upper part of this door a line is attached, and, passing over the roof, is led down into the trap at the inner end, and there held by a peg of ice in the ground. Over the peg the bait is fastened ; and the whole machinery is concealed by a false roof. Of course, when the bait is removed, the line slips off the peg, and the door comes down. This contrivance is quite in character with the surrounding scenery ; and thus the wolf is deceived, in spite of his habitual caution. Two were taken at Winter Island in this manner, at the time of Captain Parry's second voyage. The Indians in the neighbourhood of Lake Winnipic, which is the reservoir of several large rivers, and discharges itself by the river Nelson into Hudson's Bay, were, till a very recent period, principally employed in trapping wolves. They were accustomed to make tallow from their fat, and prepare their skins to exchange with the traders from Montreal. The dealers in fur, associated into a company in Canada, exported to England in one year (1793) wolf-skins to the number of three thousand eight hundred.*

* Mackenzie's Voyages, 1801.

As civilization has advanced in these fine provinces, the Indians, and the beasts of the forests and rivers, have been driven further and further into the wilds, onward to the coldest regions. But the trade in furs of North America is still very considerable, and is now principally in the hands of the Hudson's Bay Company. Some idea of the destruction of animal life, to provide for the comforts and luxuries of Europeans, may be formed from the statements which we gather in Captain Franklin's Narrative of his Journey—that, in 1822, the Hudson's Bay Company imported 3000 skins of the black bear, 60,000 of the pine marten, 1800 of the fisher (a species of sable,) 4600 of the mink, 7300 of the otter, 8000 of the fox, 9000 of the Canadian lynx, 60,000 of the beaver, 150,000 of the musk rat; beside smaller numbers of the skins of wolves, wolverines, badgers, and racoons.

Amongst the modes of catching or destroying wolves practised by rude nations, Pennant mentions that the Kirghese Cossacs (Tartars) take them by the



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help of a large hawk called *Berkut*, which is trained to attack them, and will fasten on their head, and deliberately tear out their eyes.

Amidst this constant warfare of mankind against the wolf, it is not surprising that the character of the species should be that of ferocity, cunning, and suspicion ; that they should be with difficulty tamed ; and that the human race should be to them the object of dread and of aversion. It is probably owing to the influence of the same hereditary fear, that both the male and female wolf are most remarkably solicitous for the protection and defence of their young. The female prepares a nest, or she burrows, (as is the case with most of the American varieties,) in almost inaccessible situations : she lines this retreat with moss, and with her own hair. She suckles her cubs for two months, during which the he-wolf supplies her with food. When they begin to eat, they are fed with half-digested meat, which the parents themselves disgorge ; and till the cubs are sufficiently grown to protect themselves—that is, till they are six or eight months old—the parents invariably watch over their safety. The female Fox is distinguished in the same manner for the care of her young. It is to this strong affection for their offspring, increasing doubtless with the necessity for protection, that the race of wolves has not, long ago, been extirpated, at least in Europe. Were the young left without the aid of this extraordinary parental care, they would have little chance of escape from the indefatigable hostility of man. A distinguished writer and naturalist of the last age says, "There are no animals destitute of some means to preserve themselves and their kind ; and these means so effectual, that notwithstanding all the endeavours and contrivances of man and beast to destroy them, there is not to this day one species lost of such as are mentioned in

history."* This must be taken with a limitation to the *recent* races of animals—those "mentioned in history;" for the researches of naturalists have discovered fossil remains of animals, differing from any which we at present know. And yet it is by no means certain that some of these animals do not even now exist, although we are unacquainted with them.† The kangaroo, and the ornithorhynchus, two of the most extraordinary creatures of Australasia, with which we are now familiar, were unknown to Europeans half a century ago. Large tracts of Africa are yet unexplored; and it is possible that the future enterprise of such travellers as those who have already penetrated some distance into those regions, may be successful in discovering either the abodes of civilization, or, what is more probable, new varieties of animal life unsubdued by man, and essentially differing from those of which the human race has already made a conquest.

In the menagerie of Mr. Wombwell, there were exhibited, in October, 1828, two animals from a cross between the wolf and the domestic dog, which had been bred in this country. They were in the same den with a female setter, and were likely again to multiply the species. A similar circumstance is related by the celebrated anatomist, John Hunter, in the Philosophical Transactions for 1787: and he contends, that this fact establishes that the wolf and the dog are the same species. He deduces the like conclusions, from the same fact, with regard to the dog and the jackal. In corroboration of this argument, we may add, Sir Everard Home mentions the intestines of the dog and the wolf as of similar length, while those of the fox are shorter. The length of the in-

* Ray's Wisdom of God, in the Works of the Creation.
† See Home, Comparative Anatomy, vol. iii. p. 180.

testines is important with regard to the habits of the animal. In those wholly of a carnivorous nature, such as the lion, the intestinal canal is considerably shorter than in those which feed even occasionally on vegetables.

The female wolf goes with young sixty-three days, producing from five to nine whelps at a litter, whose eyes are not opened till about the twelfth day, like the whelps of the dog. The average duration of the wolf's life is from fifteen to twenty years.

Mixed breed of Dog and Wolf.

Canis aureus, Linnæus—*Le Chacal*, Fred. Cuvier.

We have already mentioned that there is no essential difference in the jackal and the dog ; and we have seen that, in the principal point which determines the identity of a species,—the power of continuing a mixed variety,—the dog, the wolf, and the jackal, are entirely similar. The difference, therefore, which certainly exists in their character, must be found in hereditary habit, whether amongst the domesticated or the wild varieties.

There are three jackals in the Zoological Gardens, presented to the society by different individuals. The average length of their bodies is about two feet, and their height, at the most elevated part of the back, one foot. The length of the tail is about seven inches. The eyes, of which the pupils are round, as in the dog, are small ; the tail bushy, as in the fox, but

descending only to the heel ; the hide covered with a thick hair of middling length, with a very small quantity of fur. The head, neck, sides of the belly, thighs, and outer part of the limbs and ears, of a dirty yellow ; underneath and on the sides of the lower jaw, the end of the upper lip, under the neck and belly, and the inner surface of the limbs, somewhat white ; the back and sides of the body to the tail, of a gray yellow, which is abruptly divided from the surrounding lighter colours ; the tail a mixture of yellow and of black hair, the black prevailing at the extremity ; the muzzle and nails black ; the eyeballs black.

We have described the jackal thus minutely, for, at the time of Pennant, no specimen had been brought to England ; and the popular descriptions of this animal are, therefore, singularly vague. This is remarkable, when we consider the extreme abundance of the jackal in the Levant, and other parts of the eastern world, with which this country has long had commercial intercourse. He is found in Africa, from the Cape of Good Hope to Barbary ; in Syria, in Persia, and in all Southern Asia. It is considered by the best commentators that the three hundred foxes to whose tails Samson tied firebrands, were jackals. Their habit of assembling together in large troops, so as to be taken in considerable numbers, justifies this conclusion ; for the fox is a solitary animal. To the inhabitants of hot countries the jackal is of the same service as the vulture and the hyæna. He does not require living prey to feed upon ; but, wherever there is an animal body in a state of decomposition, his nose scents it at a great distance, and the air is soon freed from the putrescence.

But the jackal is still a beast of prey ; and the association of the species in strong packs enables them to hunt down the antelope and the sheep. He has

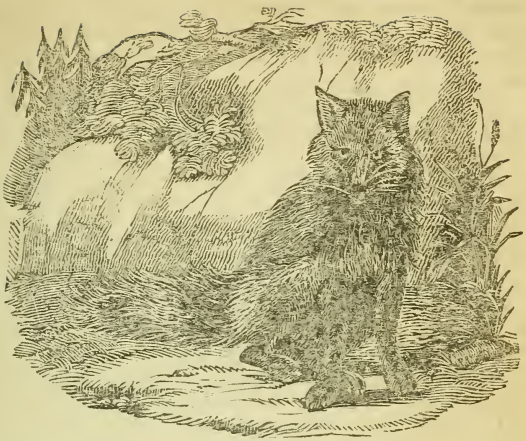
been popularly called the lion's provider. The common notion that he is in confederacy with the lion, for the chase of their mutual prey, is an erroneous one. At the cry of the jackal, echoed as it is by hundreds of similar voices through the woods and arid plains, the lion, whose ear is dull, rouses himself into action. He knows that some unhappy wanderer from the herds has crossed the path of the jackal, and he joins in the pursuit. Of this nocturnal cry we have read the most fearful accounts. "The chacal's shriek" has been often described as more terrific than the howl of the hyæna, or the roar of the tiger; and it probably is most alarming, from its singular dreariness, amidst the lonely regions in which it is heard. It is well described in Captain Beechey's account of his Expedition to explore the Northern Coasts of Africa :—"The cry of the jackal has something in it rather appalling, when heard for the first time at night; and as they usually come in packs, the first shriek which is uttered is always the signal for a general chorus. We hardly know a sound which partakes less of harmony than that which is at present in question; and, indeed, the sudden burst of the answering long-protracted scream, succeeding immediately to the opening note, is scarcely less impressive than the roll of the thunder-clap immediately after a flash of lightning. The effect of this music is very much increased when the first note is heard in the distance (a circumstance which often occurs) and the answering yell bursts out from several points at once, within a few yards, or feet, of the place where the auditors are sleeping."

The difficulty of domesticating the jackal, if it were desirable, would arise from two causes. The one is the strong odour which he emits, as filthy as that of the fox; and yet it is said that the skunk (a species of civet) loses its offensive smell in captivity. The other

cause is the extreme timidity of the jackal at the sight of a stranger,—he flies when he is approached, although he attempts no resistance when touched. This is, perhaps, a peculiarity arising out of confinement; for Captain Beechey says, that he has frequently gone close up within a few yards of a jackal in the wild state, before he would turn to walk away.

There are several other species of the group *Canis*, which very nearly resemble the jackal; we may, probably, have opportunities, in the progress of this work, of describing them from living specimens.

It appears, from a paper by John Hunter, (Phil. Trans. 1787,) that a female jackal, which whelped in this country, went with young about the same period as the dog; and that the whelps were first blind as those of the dog.



Canis Decussatus—GEOFFROI.
Renard croisse—DESMAREST.

THE *Cross Fox*, in the Gardens of the Zoological Society, differs very little in shape from the common fox. The colour of his fur is a sort of gray, resulting from the mixture of black and white hair; he has a black cross on his shoulders, from which he derives his name. The muzzle, the lower parts of the body, and the feet, are black; the tail is terminated with white.

This species of fox is a native of North America; and in his habits he differs very little from the fox of Europe. Whether found in the Old or New World, the fox is the same wily and voracious animal; greedily seizing upon birds and small quadrupeds, either in the woods or near the habitations of man; burrowing with great ingenuity, so as to elude observation, and providing for escape with equal sagacity;

hunted by man ; disliked and betrayed by most of those animals who have a dread of his attacks ; and extremely difficult to be tamed, even when caught very young.

The fox, like the wolf, is the constant object of persecution, from the ravages which he commits upon the exposed property in the fields and habitations of men. He has been a destroyer of vineyards from the earliest times : " Take us the foxes, the little foxes, that spoil the vines."* He devours honey ; he sucks eggs ; he carries off poultry ; he kills the hare in her form, and the rabbit in the warren. He is, therefore, universally hunted and destroyed. In England, the breed is not extinct, partly from the extreme prudence of the animal, and partly because it is considered unsportsmanlike to kill a fox, except in the chase. Fox-hunting, perhaps, furnishes the best excuse for the continuance of a custom which, although it has been called an instinct of man, must certainly be an instinct belonging to a very rude and early state of society.

The fox may in some degree be considered a nocturnal animal ; for, in a strong light, the pupil of the eye contracts, like that of the cat.

The female fox produces four or five whelps at a litter, which arrive at maturity in about eighteen months, and live, upon the average, thirteen or fourteen years.

Having thus noticed many interesting specimens, and given some general particulars, of the family of dogs, we subjoin their scientific character :—

The group of carnivorous quadrupeds, known by the name *Canis*, and which is found in all parts of the habitable globe, excepting a few islands of the

* Song of Solomon.

Pacific Ocean, comprehends the dog, the wolf, the jackal, and the fox.

The teeth of this group are thus arranged :—

Incisors $\frac{6}{6}$, Canine $\frac{1-1}{1-1}$, Molar $\frac{6-6}{7-7}$, Total 42.

They have two tuberculous teeth behind each carnivorous one. Their teeth are equally fitted for devouring animal and vegetable substances.

The tongue is not rough, as in the cat, but perfectly smooth.

They walk upon the ground with their toes, which have curved claws for scratching the earth. These claws are not retractile, or capable of being drawn back within a sheath. Each of the fore feet has five toes, four of which only touch the ground. The hind feet have generally four toes, though in a few varieties a fifth is developed.

In the dog, the wolf, and the jackal, the pupils of the eyes are round ; in the fox, they are transversely linear.

Note.—The following engraving, which represents one side of the skull of the jackal, is principally given to shew the form and arrangement of the *teeth* of the group of dogs ; viz., 6 incisors, or cutting teeth, in each jaw in front ; 2 canine, or tearing teeth (tusks) in each jaw next the incisors ; and 6 molar, or grinding teeth, in the upper jaw, and 7 in the lower, ranging from the canine teeth to the back of the jaw, on each side of the mouth.

Skull of the Jackal.

Chapter V.

THE HYÆNA.

We may often, in the course of this work on Menageries, be hurried abruptly away from one species of beings to a very different species; following, in this respect, the course of the mind itself, which cannot exactly define, although it yields to, some association of ideas which may appear in themselves to have no essential connexion. For instance, without any great violation of propriety, we might have gone from the sagacity of the dog, which is most developed in its intercourse with man, to the extraordinary instinct of the beaver, which is wholly devoted to the preservation and comfort of its species, without any direction from the intelligence of the human race. The trains of thought, by which any one part of the animal kingdom (limiting even our observations, as at present, to Quadrupeds) may be connected with another, are so various, that we might, not being strictly bound by a scientific arrangement, take either the moral or the physical relations by which this great variety of creatures is associated. But we shall generally prefer, as the most obvious course, to be guided, wherever we can, by *natural* similarities; for these determine the approximating relations as to physical structure, and thence as to the more important habits, of the individual quadrupeds which are presented to our notice: and wherever there are *links*, as they are both popularly and scientifically called, connecting one species with

another, and breaking down the abrupt transitions which, to an imperfect observation, might appear to prevail in the family of Nature, particularly to point out those links, as affording some of the most striking of the numberless illustrations of the harmony that prevails throughout all the visible world. It is probably owing to the imperfections of our knowledge, that this harmony is not discovered in every portion of existence; that the gradations with which the universal law of God's providence works, are not always perceptible to our limited faculties; and that we are thus sometimes startled by the infinite diversity of the various modifications of being, when, in truth, an accurate examination would exhibit, instead of what we consider abrupt differences, an endless succession of changes so minute and gradual, as to approach to similarities, (links of the same chain,) from the humblest flower up to the highest condition of animal life in ourselves. "There is, in this universe, a stair, or manifest scale of creatures, rising not disorderly, or in confusion, but with a comely method and proportion."*

The dog—we mean the group which we have described under the generic name *Canis*—and the hyæna, are essentially different species. Their teeth are very different. This distinction, as we shall have occasion repeatedly to shew, constitutes the principal character by which a naturalist determines the identity, or the difference, of the animals which come severally under his observation. It was not a vain boast, when a zoologist exclaimed, "Shew me the tooth of an animal, and I will inform you of the history of a being which I never saw." By the largeness of the tooth he could judge of the relative size of the animal which bore it; and by the form of the

* Religio Medici, § 33.

tooth he could tell whether it was fitted to grind grass or to tear flesh ; and therefore whether it belonged to an herbivorous or a carnivorous species. Carrying on his inquiries from this point, he could decide, in a great degree, as to the structure not only of the stomach and of the viscera, but of the extremities, whether armed with claws or protected with hoofs ; and, looking still onward, he could thus judge of the vivacity of the senses which belonged to the animal, and of the habits which it derived from its peculiar conformation :—knowing, beyond doubt, that there was an intimate agreement in all the properties of its existence ; and that every thing in its organization was regulated by an undeviating harmony. The dog and the hyæna, therefore, being essentially different in the number and form of their teeth, constitute different species, without regard to their external appearance. But naturalists are not entirely regardless of outward shape or colour, or even of the more subtle variations of habit, in determining the relations between one group and another ; and thus differences as to classification sometimes arise, which are, after all, only settled by a balance of similarities. Within these few years, a quadruped has been brought from Africa, which is common enough about the Cape, partaking very much of the qualities both of the dog and the hyæna. In the number and arrangement of its teeth, and in the form and number of its ribs, it belongs to the species of dog ; partly in form and in colour, in the number of its toes, and, it is said, in one most important circumstance connected with the continuance of its race, it resembles the hyæna. From these similarities and these differences, it has been assigned by naturalists both to the species of the hyæna and the dog. Mr. Burchell, the African traveller, who first brought a specimen to England, calls it *Hyæna venatica*, the hunting

hyæna; M. Temminck, in an interesting memoir especially devoted to the subject, names the animal *Hyène peinte*, the painted hyæna; and M. Desmarest, *Canis pictus*, or *Loup peint*, the painted Wolf.

The specimen which we have selected for representation is in the travelling menagerie of Mr. Wombwell. This animal, which has been several years in England, was brought from the Cape, and was formerly in the possession of Mr. Bullock, of the Egyptian Museum. It was accidentally lamed in the right foot, by leaping out of a window; by which the limb is shortened

Hyæna-Dog.
Canis pictus, DESMAREST—*Hyæna venatica*, BURCHELL.

In the Menagerie of the Tower there is also a specimen of this remarkable quadruped. The markings on the coat (from which the hyæna-dog derives the name "painted") are somewhat more distinct in this individual than in that belonging to Mr. Wombwell

this may probably be an effect of the difference of age. In the form of the head, they are each more like the hyæna than the dog ; and the strength of their jaws is singularly great—another point of resemblance to the hyæna. We have observed the animal in the Tower peeling the gristly matter from the shin-bone of an ox; and we were much astonished at the extraordinary force he displayed, compared with the general slightness of his make. The legs of the hyæna-dog are longer than those of most dogs ; and his appearance is indicative of great lightness and speed. He is, in point of bodily power, a most formidable enemy to the herds of the colonists; and as these dogs hunt in troops, the destruction they produce is very considerable.

We have reason to believe, from a comparison of the hyæna-dog represented in the preceding engraving with that in the Tower, that these animals vary considerably, both as to the brilliancy and the distribution of the spots upon their bodies. M. Desmarest states, that the one described by M. Temminck differed greatly in this respect from another specimen, brought from the Cape by M. Delalande. Without, therefore, entering into a more minute description of the hyæna-dog, we may state that in his general dimensions he resembles the wolf of Europe, but is somewhat slighter, and more elevated on his legs ; that his hide, which is of a sandy bay colour, is varied by large spots of black, brown, red, and white ; and that his tail is bushy towards the end, is divided in the middle, as to colour, by a ring of black, and reaches the ground.

Mr. Burchell, who, during his travels in the interior of Southern Africa, first particularly observed the distinctive character of this animal, which he called the hunting hyæna, from its habits, has this passage in his Journal of the 6th of June, 1812 :—"In the

morning Philip returned with the oxen ; but reported, that in consequence of Abram Abrams neglecting, on the night before, to secure them as usual in the cattle pound, the *wilde honden* (wild dogs) had bitten off the tails of three : one had only lost the brush ; but the others were deprived of the whole. This species of hyæna is remarkable for hunting in regular packs. Though in general a nocturnal animal, it frequently pursues its prey by day ; and as it is well formed by nature for speed, none but the fleeter animals can escape. Sheep and oxen, therefore, are more particularly exposed to its attacks ; the first openly, but the latter only by stealth, as in the present instance, surprising them in their sleep, and suddenly biting off their tails, which the large opening and great power of their jaws enable them to do with ease. I have never heard that large cattle are assaulted by them in any other way ; but the loss of their tail is a cruel inconvenience to cows and oxen, in a country where the warmth of the climate subjects them to great annoyance from flies."

The hyæna-dog in the Tower is somewhat playful, and does not appear very violent. Mr. Burchell kept one chained up for thirteen months, in a stable-yard ; and during that time its ferocious nature deterred every body from an attempt at taming it. At length, it became so much softened in its manners, as to play with a common domestic dog, which was also chained in the yard, without manifesting any desire of injuring its companion. The man who fed it, however, never dared to venture his hand upon it.

Reverting to the introductory observations of this Chapter, we may not improperly say a few words, as to those links which appear to connect every variety of organization in one grand chain. As the partition between the dog and the hyæna seems to be

somewhat broken down by the discovery of an animal whose physical structure, in many particulars, bears a resemblance to each *species* ; so, in the same manner, the greater partition which separates the *class* of Mammalia from that of Birds, has been of late years in part removed, by the discovery of an animal possessing the beak of a bird, and the four feet of a quadruped. The history of this extraordinary animal, the *Ornithorhynchus*, a native of New South Wales, is still imperfectly known ; and the most celebrated anatomists of Europe are still divided in opinion respecting the class to which it belongs ; although the recent investigations of Professor Meckel afford stronger evidence than has been hitherto adduced, of its belonging to the Mammalia, or those animals which suckle their young.* While regarding such instances as these, in which the lines of separation, not only between one family and another, but even between one class and another, are blended, as it were, together, we must not hastily take up an idea that such varieties of animal life are the result of accidental combinations of creatures of a different species. If the species be essentially different, Nature has interposed, either to prevent their multiplying at all, or has forbidden the further multiplication of the produce beyond the first generation ; having established barriers, which have been, as yet, found impassable, against that violation of her beauty and propriety which would result from an unlimited mixture of distinct races. In every case where a new animal is found, it may, therefore, reasonably be concluded that the species has not before been known to man. The same principle applies to fossil remains.

" This branch of anatomy—fossil osteology" (the knowledge of fossil bodies)—" not only brings to

* Vide Blumenbach's Comparative Anatomy, by Lawrence and Coulson, p. 366.

our knowledge races of animals very different from those with which we are acquainted, but supplies many of the intermediate links in the gradation of structure which are wanting in the present creation; and, therefore, makes it probable that, when the two are sufficiently investigated, one regular and connected chain will be formed, each class of animals imperceptibly running into that which is next to it."*

And this consideration naturally leads us to contemplate the vast extent of the animal kingdom, as laid open to our view, however imperfectly, by the labours of successive naturalists. The Psalmist marks, first, the extent and variety of the creation, and afterwards the law by which it has been created— "How *manifold* are thy works, O Lord! in wisdom hast thou made them all." Ray, whom we have already mentioned, takes this position as the text for his admirable work on "the Wisdom of God." His statements of the number of known species, compared with the results of similar inquiries in our own day, offer a striking subject of comparison.

"The species of *beasts*," says he, "including also *serpents*, are not very numerous: of such as are certainly known and described, I dare say not above *one hundred and fifty*. And yet I believe not many, that are of any considerable bigness, in the known regions of the world, have escaped the cognizance of the curious." In the most complete modern works on natural history, we find described about *five hundred* species of quadrupeds and other mammalia; and the number of reptiles nearly approaches *six hundred*, since the discovery of many new species of serpents in the East Indies.

Ray thus continues: "The number of *birds* known and described may be near *five hundred*, and the

* Home—Comp. Anat. vol. iii. p. 183.

number of *fishes*, secluding shell-fish, as many ; but if the shell-fish be taken in, more than six times the number. How many of each genus remain yet undiscovered, one cannot certainly nor very nearly conjecture ; but we may suppose the whole sum of beasts and birds to exceed by a third part, and fishes by one half, those known." According to Latham, and other ornithologists, the class of birds reaches nearly *four thousand* in number, or eight times the number mentioned by Ray. Of fishes, Bloch and Lacépède have described more than two thousand ; and, from later discoveries, we may conclude that there are about *three thousand* known species. Of *molluscous animals*, and of shell-fish in particular, *seven* or *eight thousand* species have been determined ; although it should be observed that, in this department of natural history especially, it is extremely difficult to pronounce upon the distinctions of species, without being led astray by accidental variations.

The researches of modern naturalists have extended our certain knowledge of the various species of *insects* in a very surprising degree. At the time when Ray wrote his work, 1691, the catalogues of insects were exceedingly imperfect ; and he is therefore obliged to form conjectures as to their numbers. He considers that there are two thousand British insects ; and, reasoning by analogy from the proportion of native and exotic plants, he concludes that there are twenty thousand insects in the whole world. The catalogue of Fabricius, a distinguished entomologist, contained, in 1781, the enumeration of eighteen thousand species ; but according to Latreille, subsequent discoveries have raised that number to *twenty-five thousand*, of those actually known, described, and classified. In America, in particular, the new species that are constantly discovered are absolutely bewildering to the naturalist.

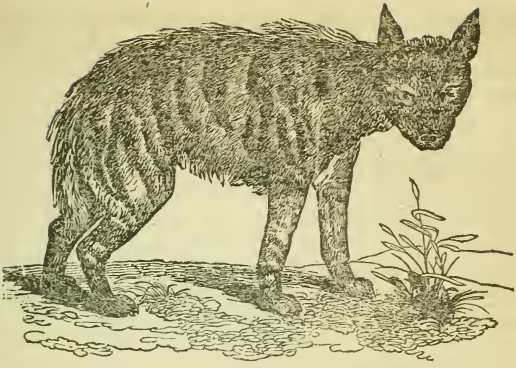
To complete this enumeration of the extent of the "manifold works" of Providence, we should not omit to mention a class of animal life, which Ray does not notice, the worms, and particularly that class which connects the animal kingdom with the vegetable, the zoophytes. These classes, including the star-fish, the polypi, the coral insect, (or madrepores,) the sponges, and the microscopic animalcules, appear to baffle, in their variety, as well as in their minuteness, all conclusive investigation; and yet *between three and four thousand* species have already been described.

We thus see that, up to the present time, we have about *fifty thousand different species* of animal life described by modern naturalists; and probably, exactly in the proportion that their labours have gone far beyond the bounds of discovery contemplated as possible by earlier inquirers in the same fruitful field, will the discoveries of future naturalists shew that this vast enumeration which we have just stated, is equally short of a complete account of the results produced by the extraordinary fecundity of every department of nature. The more minutely we examine the neighbourhood in which we live,—nay even a single bed of the very garden, or the smallest portion of the very field, in which we daily walk,—the more will our attention be repaid by the discovery of some new and surprising variety of existence. Ray, with that candour and modesty which is the great characteristic of a philosophic mind, says, "Having this summer, anno 1691, with some diligence prosecuted the study of our English insects, and making collections of the several species of each tribe, but particularly and especially of the butterflies, both nocturnal and diurnal, I find the number of such of these alone as breed in our neighbourhood (about Braintree and Noteley in Essex) to exceed the sum

I last year assigned to all England." In the same spirit, Linnæus, one day herbarizing with his pupils, covered with his hand a green turf, saying that he had that under his hand whose consideration might justly occupy all of them for a considerable portion of their lives. He verified this assertion by shewing that within that space there were thirty-four different species, either of grass, or moss, or insects, or animalcules, or varieties of mineral. "How then," continued Linnæus, "shall we estimate the total productions of the entire globe, when the little space that my hand covered is found to contain so many various objects?"

Having thus described the species, or the variety, called the hyæna-dog, we proceed to that species which is essentially different from the dog, the HYÆNA. With this animal the people of our country are generally familiar, from the opportunities which they have constantly had of seeing it in menageries. There are only two species now known—the striped and the spotted.

The following engraving is a portrait of a Striped hyæna in Mr. Cross's menagerie at Exeter Change, in September, 1828. Its height was twenty-five inches. We should imagine this specimen was somewhat more than an average height; for Desmarest gives (in English measure) the height of the striped hyæna, at the shoulders, as nineteen inches. The ordinary length of the body, from the muzzle to the tail, is about three feet three inches. The colour of the striped hyæna is a brownish gray, with transverse bands of dark brown on the body, which stripes become oblique on the flanks and the legs. The hide is composed of two sorts of hair; the fur, or wool, in very small quantity, and the silky hair, long, stiff,



Striped Hyæna.
Hyæna vulgaris, Desmarest; *Canis Hyæna*, Linnæus.

and not very thick, excepting on the limbs, where the hair is short and close, and on the muzzle, which is quite shaven, as well as the external face of the ears. The hair upon the line of the back is much thicker and stronger than on any other part, particularly on the withers, forming a sort of mane, extending from the nape of the neck to the beginning of the tail, which is also covered with long hair.

The striped hyæna is a native of Barbary, Egypt, Abyssinia, Nubia, Syria, and Persia. This species was known to the ancients, and is described by Aristotle with much correctness. Pliny, however, and other writers on natural history, have left us abundant proofs of the extent of human credulity, when employed upon such objects as ferocious animals, whose habits were imperfectly known, and were calculated to produce terror and disgust. The hyæna possesses great strength in the neck, and for this reason, Pliny, and other ancient writers, believed that his neck consisted of one bone, without

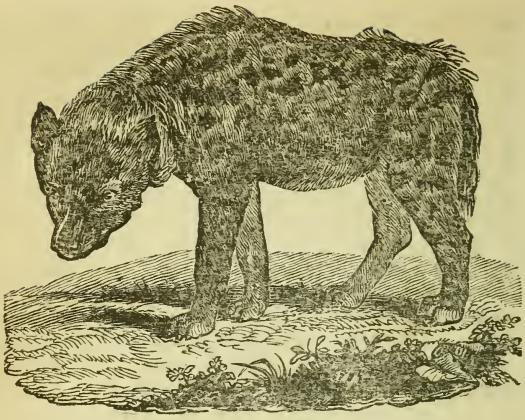
any joint. The ancients considered also, as may be seen by a passage in Lucan's Pharsalia, (lib. vi. 672) that this neck without a joint was of peculiar efficacy in magical invocations. Shaw tells us, in his travels, that the Arabs, when they kill a hyæna, bury the head, lest it should be made the element of some charm against their safety and happiness. It is in this way that superstitions extend themselves through the world, and endure for many generations. The Greeks and Romans believed, too, of the hyæna, that it could change its sex ; that it imitated the human voice (the popular name of *laughing* hyæna is, perhaps, derived from this notion,) and that it had the power of charming the shepherds so as to rivet them to the spot upon which they were met by the quadruped, in the same way that a serpent fascinates a bird. A somewhat similar notion prevailed amongst the poets and naturalists of antiquity with regard to the wolf; they affirming, that if a man encountered a wolf, and the wolf first fixed his eye upon him, he was rendered incapable of speaking, and became permanently dumb. These stories, both of the hyæna and the wolf, are evidently exaggerations of the fear which would naturally be produced by the sudden encounter with a ferocious and dangerous animal. Many of the notions of antiquity, with regard to the structure and habits of animals, were equally irrational. It was gravely maintained, for instance, that the elephant had no joints, and, being unable to lie down, slept leaning against a tree ; that the badger had the legs of one side shorter than those of the other ; that the bear brought forth her cubs imperfectly formed, and licked them into shape ; that deer lived several hundred years ; that the cameleon derived its support solely from the atmospheric air. These, and many other fancies, proceeded either from a literal construction of metaphorical expres-

sions, or a complete ignorance of the economy of nature, with regard to the laws by which animal life is regulated. "There are no grotesques in nature." Such errors as these have long since been exploded, and the cause of real knowledge has been therefore greatly advanced, by the substitution of the true for the fabulous. The popular interest of natural history is not necessarily reduced by this separation of fact from fiction: for the more we examine the operations of nature, the more shall we be sensible of the real wonders which they present; but which, however extraordinary they may appear, are never inconsistent with the great principles of organization, and are never calculated to present any exceptions to the beauty and harmony of that design by which every living thing is formed and sustained.

The qualities of the two sorts of hyæna are so similar, that we may simplify our description of the habits of each, by describing, at this point, the particular appearance of the spotted species.

The individual represented in the next page is in Mr. Cross's collection. In September last, he was eight months old, and was about twenty inches in height.

The spotted hyæna is a native of Southern Africa; and the species is found, in large numbers, in the neighbourhood of the Cape of Good Hope; from this circumstance, Desmarest named it. The general shape of this hyæna is very similar to that of the striped, though it is ordinarily smaller. The mane is remarkable, but not quite so full as in the striped species. The general colour of the hide is a dirty yellow, approaching to a blackish brown on the belly and limbs, with spots also of a blackish brown, more or less deep, on all parts of the body, excepting the under part of the belly and of the



Spotted Hyæna.
Canis crocuta, Linnæus ; *Hyæna Capensis*, Desmarest.

breast, the inner surface of the limbs, and the head ; the extremity of the muzzle is black ; the tail is brown, without spots.

The peculiar powers of the hyæna, arising out of the extraordinary strength of his jaws and teeth, admirably fit him for the purposes which he serves in the economy of nature. An inhabitant of warm countries, he principally derives his subsistence, in common with the jackal and the vulture, from those animal remains, which, if unconsumed, would produce the most serious inconvenience. All the narratives of residents in, or travellers through, Southern Africa, agree in their accounts of these facts. Mr. Pringle, in the notes to his "Ephemerides," says, "There are several species of the vulture in South Africa, but the most common is the large light-coloured *vultur percnopterus*, one of the sacred birds of the ancient Egyptians These fowls divide with

the hyænas the office of carrion-scavengers ; and the promptitude with which they discover and devour every dead carcase is truly surprising. They also instinctively follow any band of hunters, or party of men travelling, especially in solitary places, wheeling in circles high in the air, ready to pounce down upon any game that may be shot and not instantly secured, or the carcase of any ox or other animal that may perish on the road. I have seen a large ox so dexterously handled by a flock of these voracious fowls, that in the course of three or four hours not a morsel, except the bones and the skin, (which they had contrived to *disincarnate* almost entire,) remained for the hyænas. In a field of battle in South Africa, no one ever buries the dead : the birds and beasts of prey relieve the living of that trouble. Even the bones, except a few of the less manageable parts, find a sepulchre in the voracious maw of the hyæna." Mr. Burchell, speaking of the office of vultures in hot regions, says, "Vultures have been ordained evidently to perform very necessary and useful duties on the globe ; as, indeed, has every other animated being, however purblind we may be in our views of their utility ; and we might almost venture to declare that those duties are the final cause of their existence. To those who have had an opportunity of examining these birds, it need not be remarked how perfectly the formation of a vulture is adapted to that share in the daily business of the globe which has been allotted to it—that of clearing away putrid or putrescent animal matter, which might otherwise taint the air and produce infectious disease." The vulture is enabled to perform these duties, in countries of great extent and thinly-scattered population, principally from his extraordinary powers of *sight*. The wonderful extent of vision of this bird's eye is shewn in the following instance :—"In the year 1778, Mr.

Baber, and several other gentlemen, were on a hunting party, in the island of Cossimbuzar, in Bengal, about fifteen miles north of the city of Murshedabad. They killed a wild hog of uncommon size, and left it on the ground near the tent. An hour after, walking near the spot where it lay, the sky perfectly clear, a dark spot in the air at a great distance attracted their attention. It appeared to increase in size, and move directly towards them: as it advanced, it proved to be a vulture flying in a direct line to the dead hog. In an hour, seventy others *came in all directions*, which induced Mr. Baber to remark, this cannot be smell."* The faculty of *smell* of the hyæna conducts him as certainly to his food as the *sight* of the vulture. Major Denham tells us in his Journal, "the hyænas came so close to the tents last night, that a camel, which lay about a hundred yards from the inclosure, was found nearly half-eaten. A lion first made a meal on the poor animal, when the hyænas came down upon what he had left." Mr. Burchell says, "A new species of antelope, which had been shot late on the preceding evening, was fetched home; but during the night, the hyænas, or wolves as they are usually called by the Boors and Hottentots, had devoured all the flesh, leaving us only the head and the hide." These, and many more instances which we might select, shew us that in these regions, in the very hour when any quadruped falls, the sharp-scented hyænas immediately make their appearance, and rush into the encampments of man for their share of the prey. At the Cape, they formerly came down into the town, unmolested by the inhabitants, to clear the shambles of their refuse. The common notion that they tear newly-buried bodies out of graves is not inconsistent with their extraordinary

* Home, Comp. Anat. vol. iii. p. 216.

voracity, and the peculiar strength of their claws. It is well ascertained that hyænas devour the dead carcases of their own species.

But the depredations of the hyæna are not confined to the remains of the dead. There are periods when they become bold from extreme hunger, and will carry off very large animals, and even human beings, with the most daring ferocity. Major Denham says, "at this season of the year," (August,) "there are other reasons, besides the falls of rain, which induce people to remain in their habitations. When the great lake overflows the immense district which, in the dry season, affords cover and food, by its coarse grass and jungle, to the numerous savage animals with which Bornou abounds, they are driven from these wilds, and take refuge in the standing corn, and sometimes in the immediate neighbourhood of the towns. Elephants had already been seen at Dowergoo, scarcely six miles from Kouka; and a female slave, while she was returning home, from weeding the corn, to Kowa, not more than ten miles distant, had been carried off by a lioness. The hyænas, which are everywhere in legions, grew now so extremely ravenous, that a good large village, where I sometimes procured a draught of sour milk on my duck-shooting excursions, had been attacked the night before my last visit, the town absolutely carried by storm, notwithstanding defences nearly six feet high of branches of the prickly tulloh, and two donkies, whose flesh these animals are particularly fond of, carried off, in spite of the efforts of the people. We constantly heard them close to the walls of our own town at nights; and on a gate being left partly open, they would enter and carry off any unfortunate animal that they could find in the streets."

With this strong desire for food, approaching to the boldness of the most desperate craving, the

hyæna, although generally fearful of the presence of man, is an object of natural terror to the African traveller. Bruce relates, that one night in Maibsha, in Abyssinia, he heard a noise in his tent; and getting up from his bed, saw two large blue eyes glaring upon him. It was a powerful hyæna, who had been attracted to the tent by a quantity of candles, which he had seized upon, and was bearing off in his mouth. He had a desperate encounter with the beast, but succeeded in killing him. In the neighbourhood of the ruins of those cities on the northern coast of Africa, which, in ancient times, were the abodes of wealth and splendour, and witnessed the power of the Ptolemies and Cæsars, the hyæna is a constant resident, and increases the sense of desolation by the gloominess of his habits. At Ptolemeta, where there are many remains of former architectural magnificence, the fountains which were constructed for the accommodation of an enormous population are now useless, except to the wandering Arab, and to the jackal and hyæna, who stray amongst these ruins after sunset, to search for water at the deserted reservoirs.* Seldom does the hyæna molest the traveller in these solitudes; but his howl, or the encounter of his fierce and sullen eye, is always alarming. Captain Beechey says, "although we had very frequently been disturbed by hyænas, we never found that familiarity with their howl, or their presence, could render their near approach an unimportant occurrence; and the hand would instinctively find its way to the pistol, before we were aware of the action, whenever either of these interruptions obtruded themselves closely upon us, either by night or by day." Such encounters are generally without any fatal results, if the man does not commence the

* Beechey.

attack; the hyæna sets up a howl, and doggedly walks away, with his peculiar limping motion, which gives him an appearance of lameness: but when he is attacked, his resistance is as fierce as it is obstinate.

The hyæna has always been an object of aversion to mankind; and this feeling has been kept up, not only by the showman's stories of "that cruel and untameable beast, that never was yet tamed by man," but by writers of natural history, from the days of Pliny to those of Goldsmith. The latter pleasant compiler tells us, "no words can give an adequate idea of this animal's figure, deformity, and fierceness. More savage and untameable than any other quadruped, it seems to be for ever in a state of rage or rapacity." With regard to its deformity, we are rather of opinion with Sir Thomas Brown, that "there is a general beauty in the works of God; and therefore no deformity in any kind of species of creature whatsoever:" and, with him, we "cannot tell by what logic we call a toad, a bear, or an elephant ugly, they being created in those outward shapes and figures which best express those actions of their inward forms."* That the hyæna can be tamed, and most completely and extensively so, there can be no doubt. "The cadaverous *crocuta*," (the spotted hyæna,) says Barrow, in his Travels in Southern Africa, "has lately been *domesticated* in the Snewberg, where it is now considered one of the best hunters after game, and as faithful and diligent as any of the common sorts of domestic dogs." Bishop Heber saw a gentleman in India, Mr. Traill, who had a hyæna for several years, which followed him about like a dog, and fawned on those with whom he was acquainted; and the Bishop mentions this as an instance of "how much the poor hyæna is wronged, when he is

* Religio Medici, § 16.

described as untameable." M. F. Cuvier notices an animal of this species that had been taken young at the Cape, and was tamed without difficulty. His keepers had a complete command over his affections. He one day escaped from his cage, and quietly walked into a cottage, where he was retaken without offering any resistance. And yet the rage of this animal was occasionally very great when strangers approached it. The fact is, that the hyæna is exceedingly impatient of confinement; and feels a constant irritation at the constraint which, in the den of a menagerie, is put upon his natural habits. An individual at Exeter Change, some years ago, was so tame, as to be allowed to walk about the exhibition-room. He was afterwards sold to a person, who permitted him to go out with him into the fields, led by a string. After these indulgences, he became the property of a travelling showman, who kept him constantly in a cage. From that time his ferocity became quite alarming; he would allow no stranger to approach him; and he gradually pined away and died. This is one, out of the many examples, of the miseries which we inflict upon animals, through an ignorance of their natural habits: and the same ignorance perpetuates delusions, which even men of talent, like Goldsmith, have adopted; and which still, in the instance before us, leads many to say, with him, "though taken ever so young, the hyæna cannot be tamed." It is very doubtful whether any animal, however fierce, is incapable of being subjected to man. Mr. Barrow procured in Africa a young leopard, which he says "became instantly tame, and as playful as the domestic kitten." He adds, "most beasts of prey, if taken young, may almost instantly be rendered tame. The fierce lion, or the tiger, is sooner reconciled to a state of domestication than the timid antelope." And this is evidently a most wise arrangement of

Providence, in order that the progress of civilization, with the dominion which man has over the beasts of the field, shall not necessarily exterminate the races of the inferior animals. The fierce buffalo of the African plains, by an intermixture of breeds, and by training, becomes the patient ox of European communities ; the hyæna assists the colonists of the Cape in the business (for to them it is a business) of the chase ; the hunting leopard renders the same service to the natives of Hindostan ; and the Esquimaux dog, as we have already seen, is, in all probability, a wolf in a state of servitude.

The subject of hyænas is intimately connected with a most interesting branch of natural science, which it would be wrong here to pass over—we mean the discovery of large quantities of bones, which must have belonged to this tribe at a very distant period, not only in various parts of the European continent, but in our own island. This fact, connected with the discovery, from time to time, of the bones of the elephant, rhinoceros, hippopotamus, crocodile, and other animals, in considerable quantities, is one of the most extraordinary circumstances in the history of the globe ; and involves a discussion, whether these bones have been brought hither by some great convulsion of nature, such as the deluge, or whether they belonged to animals which were formerly inhabitants of this island.

Casting a general view over the animal and also the vegetable kingdoms, as they at present exist, we find that animals and plants are generally distributed over the earth, in bands or parallel zones, according to the degree of temperature which accords with

their respective natures. On the tops of mountains, where the air is cold, we find the animals and plants which are natives of climates near the poles ; and in the plains, where the air is mild and warm, we encounter species which are somewhat similar to those of the countries near the equator. Tournefort, a celebrated botanist, found at the top of mount Libanus, the plants of Lapland ; a little lower down, those of Sweden ; still lower, those of France ; descending near to the base, those of Italy ; and at the foot of the mountain, those of Asia. In the same manner there are zones of different temperature on the whole earth, ascending from the equator, as from the base of a mountain ; and each plant or animal is fitted by nature for a peculiar existence conformable to the climate in which it is found.* When, therefore, we discover in our own country, and in the northern parts of Europe, the remains of animals which we know are at present the inhabitants of tropical regions, we are naturally led to consider, either that the bones have been swept hither from those regions, or that some great change has taken place in our globe, of which this change in the residence (called by naturalists the *habitat*) of animals is the result. Sir Humphry Davy has shewn that a very high temperature was necessary to the production of crystals, and the waters contained in them ; and it is, therefore, considered by some geologists that the surface of our globe has been gradually cooling, particularly as experiment has determined that the metals and waters met with at the greatest depth to which man has penetrated are at present hotter than the surface of the earth is at the equator. The geologists conclude, therefore, that there was a

* See Virey—Mœurs et Instincts des Animaux, Sixième Leçon.

time when the surface of the earth was too hot for the production of animals and vegetables; that tropical animals were its first living inhabitants; and that there was a period when the climate of Europe was adapted to such animals.

Collections of the bones of hyænas have been found, in large quantities, in Franconia, in the Hartz Forest, in Westphalia, in Saxony, in Wirtemberg, in Bavaria, and in France. But the most remarkable discovery was that made by Professor Buckland, of Oxford, in a cave at Kirkdale, or Kirby Moorside, Yorkshire, in the summer of 1822. Bones of a similar nature, some in large and some in smaller quantities, had previously been found in different caverns of this country: at Crawley Rocks, near Swansea; in the Mendip Hills, at Clifton; at Wirksworth, in Derbyshire; at Oreston, near Plymouth; and in the cave of Paviland, in Glamorganshire.

The cave of Kirkdale is a natural fissure or cavern, extending three hundred feet into the body of the solid limestone rock, and varying from two to five feet in height and breadth. It was discovered accidentally in the progress of working a stone quarry, as the mouth was closed with rubbish. It is situated on the slope of a hill about one hundred feet above the level of a small river. The bottom of the cavern is nearly horizontal, and is entirely covered, to the depth of about a foot, with a sediment of mud. The surface of this mud is, in some parts, crusted over with limestone, formed by droppings from the roof. At the bottom of this mud, the original floor of the cave is covered with teeth and fragments of bone of the following animals:—the hyæna, the elephant, the rhinoceros, the hippopotamus, the horse, the ox, two or three species of deer, the bear, the fox, the water-rat, and several birds

The inference which is drawn by Professor Buckland, respecting these bones, is, that they were accumulated before the deluge in this cave or den, and that the black mud with which they are covered over is the sediment left by the waters of the flood. The effect of this mode of preserving them has been, that the bones are not at all mineralized; but actually retain nearly the whole of their animal jelly.

The bones are, for the most part, broken and gnawed to pieces, and the teeth lie loose among the fragments of the bones. Amongst these the teeth of hyænas are most abundant, the greater part of which are worn down almost to the stumps, as if with the operation of gnawing bones. Professor Buckland considers that hyænas must have been the antediluvian inhabitants of the den at Kirkdale, and the other animals, whose bones are found, must have been carried in for food by the hyænas—the smaller animals, perhaps, entire; the large ones piecemeal. Judging from the properties of the remains found in the den, the ordinary food of the hyænas seems to have been oxen, deer, and water-rats; the bones of the larger animals are more rare; and the fact of the bones of the hyæna being broken up, equally with the rest, renders it probable that they devoured the dead carcasses of their own species. Many of the bones bear the impress of the canine fangs of the hyæna. Some of the bones and teeth appear to have undergone various stages of decay, by lying in the bottom of the den while it was inhabited; but little or none has taken place since the introduction of the earthy sediment in which they are imbedded.

The discoverer of these remains contends, from the evidence afforded by the interior of this den, that all these animals, whose bones are there found, lived and died in its vicinity; and as the bones belong to

the same species which occur in a fossil state in the beds of gravel with which this kingdom abounds, it follows that the period in which they inhabited these regions was that immediately preceding the formation of these gravel beds by some transient and universal inundation, which has left traces of its ravages over the surface of the whole globe. Professor Buckland concludes, that the accuracy of the Mosaic records is thus satisfactorily established in all essential particulars.

The Fossil (or extinct) Hyæna, according to Cuvier, was about a third larger than the striped species; with the muzzle, in proportion, much shorter. The teeth, as to form, resembled those of the spotted species, but they were considerably larger. The powers of the animal, particularly in its faculty of gnawing bones, were, therefore, greater than those of the existing races.

The division of carnivorous quadrupeds, called Hyæna, is scientifically distinguished by having no small or tuberculous teeth behind the carnivorous. Its teeth are thus arranged :—

$$\text{Incisors } \frac{6}{6},\ \text{Canine } \frac{1-1}{1-1},\ \text{Molar } \frac{5-5}{4-4},\ \text{Total } 34.$$

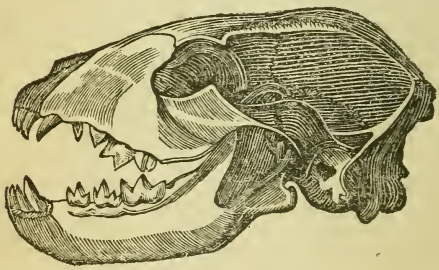
These teeth are particularly adapted for breaking bones, from their thickness.

The head is of a middle size, with an elevated forehead; the jaws shorter than those of the dogs, and longer than those of the cats; the tongue rough; the eyes large, with longitudinal pupils; the ears long, pricked, easily movable, very open, and directed forwards; the nostrils resemble those of the dogs.

They are *digitigrade*, or walk on their toes; their

feet are terminated with four toes, of which the claws, which are very strong, are not retractile ; the fore-legs appear more elevated than the hind. Beneath the tail is a glandulous pouch.

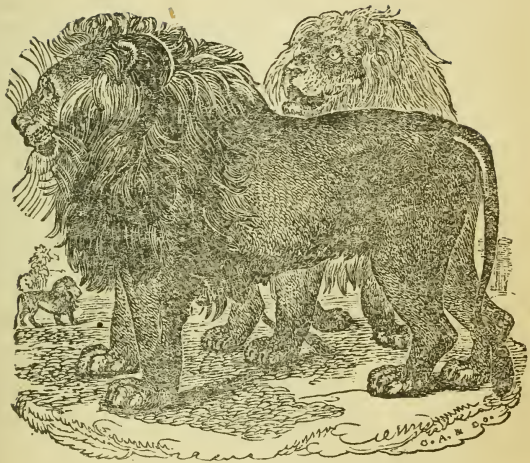
Naturalists have not ascertained the period of gestation, and other circumstances, such as the number of young at a litter, connected with the re-production of the hyæna ; nor do we find their average duration of life stated by any writer of authority.



Skull of the Hyæna crocuta.

Chapter VI.

THE LION.



Felis leo—Linnæus. *Le Lion*—Buffon.

The most interesting object of a menagerie is probably its lion; and there are few persons who are not familiar with the general appearance of this most powerful animal. To behold, in perfect security, that creature which is the terror of all travellers in the regions where he abounds; which is said to be able to bear off a buffalo on his back, and crush the skull of a horse by a single stroke of his paw—this is certainly gratifying to a reasonable curiosity. The appear-

ance of dignified self-possession which the lion displays when at rest ; his general indifference to slight provocations ; his haughty growl when he is roused by the importunities of his keepers or the excitement of the multitude ; his impatient roar when he is expecting his daily meal, and his frightful avidity when he is at length enabled to seize upon his allotted portion ;—these are traits of his character in confinement which are familiar to almost every one.

The lion, whose portrait is here presented, is a very fine animal in the collection of Mr. Cross, at Exeter Change. He is an average specimen of the African species. The ordinary length of the lion, from the end of the muzzle to the insertion of the tail, is about six feet, and the height about 3 feet. The uniformity of his colour is well known, being of a pale tawny above, and somewhat lighter beneath ; and his enormous mane is a characteristic which no one can forget. The long tuft of rather black hair, which terminates his tail, may not have been so generally observed ; but this is peculiar to his species. The pupils of his eyes are round. The lioness differs from the lion, in the want of a mane ; in the more slender proportions of her body ; and in the comparative smallness of her head.

To understand the natural habits of the lion, we must not be satisfied to observe him in menageries, where, ordinarily, his disposition is soon subjected by that fear of man which constitutes a feature of his character. We may, indeed, observe the form of this magnificent beast; and may occasionally be delighted by his gentleness and entire submission to the commands of his capricious masters. But we must compare our own impressions of his character with the accounts of intelligent travellers ; we must examine the peculiar structure of his body, as developed by skilful and patient anatomists ; and we may then

return to view the lion of the showman with correct notions of his physical powers, and with unromantic estimates of his moral qualities. It has been too much the fashion with writers on natural history to have their antipathies and their partialities towards the ferocious quadrupeds ; and thus, as the hyæna has been represented as combining every disgusting and offensive habit, so has the lion been painted as possessed of the most noble and magnanimous affections. " The King of the Beasts" is a name applied to him, with which every one is familiar. In physical strength he is indeed unequalled. He is ordained by nature to live on animal food, and fitted for the destruction of animal life by the most tremendous machinery that could be organized for such a purpose, regulated by a cunning peculiar to his species. When we investigate the modes in which he employs these powers, we may perhaps be inclined to leave the stories of his generosity to the poets and romance-writers, who (as well as the authors of more sober relations) have generally been too much inclined to invest physical force with those attributes of real courage and magnanimity which are not always found in association with it.

To comprehend the habits of the lion, we must follow with attention the narratives of those travellers who have seen him in his native haunts. From the Cape of Good Hope, for instance, an adventurous naturalist sets forth to explore the immense plains of the interior of Southern Africa. His journey is performed partly on foot, and partly in a waggon drawn by eight or ten oxen. His escort consists of a few sturdy Hottentots, accustomed to the country into which he desires to penetrate—excellent marksmen—and expert in following up the track of every wild or ferocious beast. Further and further he rolls on from the abodes of civilization, and soon finds himself sur-

rounded by tribes of Bushmen or Caffres, who live in a rude but contented manner, depending for subsistence upon their flocks and upon the chase, and knowing very few of those agricultural arts by which their arid plains might be partially redeemed from sterility. At length he reaches those parts where ferocious animals abound; and where the lion, particularly, is an object of dread. Having passed the borders of European colonization, his fears are first excited by viewing the footmarks of the lion. His Hottentot guides have their tales of terror ready for the traveller, who beholds for the first time the impress of those tremendous feet upon the sands of the plain which he is to cross; and they are ready to show their skill in tracking, if necessary, the prowling savage to his lair. So nice is this faculty in a Hottentot, of tracking footsteps, that Mr. Barrow tells us he will distinguish the wolf from the domestic dog by the largeness of the ball of the foot and the comparative smallness of the toes; and will single out amongst a thousand any of his companions' feet. This is an effect of education—an ability produced by the constant exercise of a peculiar faculty, which has been acquired by early training. It is the same ability by which a skilful shepherd is enabled to know every individual sheep belonging to his flock; and its exercise in each case proceeds from that habit of attention which enables the human mind to attain excellence in every pursuit. But even a Hottentot does not discover the footsteps of a lion without fear. Mr. Burchell, with his man Gert, was in search of a party who had killed a hippopotamus. They were hurrying on through a willow-grove, when the Hottentot suddenly stopped, and cried out with some emotion, "Look here, Sir!" Mr. Burchell continues:—"I turned my eyes downwards, and saw the recent footmarks of a lion which had been to drink at

the river, apparently not more than an hour before. This gave a check to our dialogue on the hippopotamus; and, in a lower and graver tone of voice, he talked now only of lions, and the danger of being alone in a place so covered with wood." That immediate danger passed away, but new fears of the same nature were constantly presenting themselves. Mr. Barrow says :—"It seems to be a fact well established, that the lion prefers the flesh of a Hottentot to any other creature;" and the same writer states, in another place, that this powerful and treacherous animal seldom makes an open attack, but, like the rest of the feline genus, lies in ambush till it can conveniently spring upon its prey. The best security which man and beast have against the attacks of the lion, is found in his indolence: he requires the strong excitement of hunger to be roused to a pursuit; but when he is roused, his vaunted magnanimity is no protection, even for a sleeping foe, as the poets have pretended.

We must, however, follow our African traveller a little further in his career of observation. A lowering evening comes on; thunder clouds collect in every quarter; and the night becomes extremely dark. The most vivid flashes of lightning are intermingled with the heaviest torrents of rain. The cattle are restless; and the Hottentots are prevented making their evening fire for the cookery of their supper, and for defence against the beasts of prey. On such nights as these the lion is particularly active. The fury of the elements appears to rouse him from his ordinary torpidity. He advances upon his prey with much less than his usual caution; and he is not at once driven off by the barking of dogs and the sound of muskets. The oxen of the caravan, who appear to scent the distant approach of their terrible enemy, struggle to break loose from their

waggons to escape their danger by instant flight—an escape which would prove their destruction. It is only by keeping with man that they are safe. The repeated discharge of fire-arms has the remarkable effect not only of keeping off the lion, but of abating the restlessness of the cattle. They appear to feel that their enemy will retreat when he hears this demonstration of the powers of the only creature that is enabled, by superior reason, to cope with him. Nights of such harassing watchfulness are not unfrequently experienced by the African traveller.*

It is no uncommon thing in the plains of southern Africa to encounter innumerable herds of wild animals, quietly grazing like tame cattle. Wherever the quagga (a species of wild ass,) the sprinkbok and the hartebeest (the Dutch names for two varieties of the antelope) are found, there will be lions, numerous in proportion, for the destruction of their prey. Of course those formidable beasts can only exist where the means of their support are to be procured. They are destined to live on animal food; and, therefore, where there are flocks and herds, whether in a wild or a domestic state, there they will be also. Mr. Campbell states that the quagga migrates in winter from the tropics to the vicinity of the Malaleveen river; which, though farther to the south, is reported to be considerably warmer than within the tropics, when the sun has retired to the northern hemisphere. He saw bands of two or three hundred quaggas, all travelling southward. They are followed by lions, who slaughter them night by night; and what the lions leave of the carcases of these unfortunate animals, is devoured by the vultures and the Bushmen. Even the buffalo, whose forehead, when he is of mature age, is completely covered with

* See Burchell's Travels, vol. i. chapter xviii.

a rugged mass of horn as hard as a rock, the fibres of whose muscles are like so many bundles of cords, and whose hide is little inferior in strength and thickness to that of the rhinoceros—even he is not safe from the attacks of the lion. "He lies waiting for him in ambush till a convenient opportunity offers for springing upon the buffalo, and fixing his fangs in his throat; then sticking his paw into the animal's face, he twists round the head and pins him to the ground by the horns, holding him in that situation till he expires from loss of blood."*

It has been often stated by travellers in Africa, and the statement has been repeated by Mr. Pringle, upon the authority of a chief of the Bechuanas, that the lion, after he has made his fatal spring upon the giraffe when he comes to drink at the pools, is carried away for miles, fixed on the neck of that fleet and powerful creature, before his victim sinks under him

To the traveller in Africa the lion is formidable not at night only; he lies in his path, and is with difficulty disturbed to allow a passage for his waggons and cattle, even when the sun is shining with its utmost brilliancy: or he is roused from some bushy place on the road-side, by the indefatigable dogs which always accompany a caravan. Mr. Burchell has described, with great spirit, an encounter of this nature:—

"The day was exceedingly pleasant, and not a cloud was to be seen. For a mile or two we travelled along the banks of the river, which in this part abounded in tall mat-rushes. The dogs seemed much to enjoy prowling about and examining every bushy place, and at last met with some object among the rushes which caused them to set up a most vehement and determined barking. We explored the

* Barrow, vol. i.

spot with caution, as we suspected, from the peculiar tone of their bark, that it was what it proved to be, lions. Having encouraged the dogs to drive them out, a task which they performed with great willingness, we had a full view of an enormous black-maned lion, and a lioness. The latter was seen only for a minute, as she made her escape up the river, under concealment of the rushes ; but *the lion* came steadily forward and stood still to look at us. At this moment we felt our situation not free from danger, as the animal seemed preparing to spring upon us, and we were standing on the bank at the distance of only a few yards from him, most of us being on foot and unarmed, without any visible possibility of escaping. I had given up my horse to the hunters, and was on foot myself, but there was no time for fear, and it was useless to attempt avoiding him. I stood well upon my guard, holding my pistols in my hand, with my finger upon the trigger, and those who had muskets kept themselves prepared in the same manner. But at this instant the dogs boldly flew in between us and the lion, and surrounding him, kept him at bay by their violent and resolute barking. The courage of these faithful animals was most admirable ; they advanced up to the side of the huge beast, and stood making the greatest clamour in his face, without the least appearance of fear. The lion, conscious of his strength, remained unmoved at their noisy attempts, and kept his head turned towards us. At one moment, the dogs perceiving his eyes thus engaged, had advanced close to his feet, and seemed as if they would actually seize hold of him, but they paid dearly for their imprudence, for, without discomposing the majestic and steady attitude in which he stood fixed, he merely moved his paw, and at the next instant I beheld two lying dead. In doing this, he made so little exertion that it was scarcely perceptible by what

means they had been killed. Of the time which we had gained by the interference of the dogs, not a moment was lost; we fired upon him; one of the balls went through his side just between the short ribs, and the blood immediately began to flow, but the animal still remained standing in the same position. We had now no doubt that he would spring upon us; every gun was instantly re-loaded; but happily we were mistaken, and were not sorry to see him move quietly away; though I had hoped in a few minutes to have been enabled to take hold of his paw without danger.

"This was considered, by our party, to be a lion of the largest size, and seemed, as I measured him by comparison with the dogs, to be, though less bulky, as large as an ox. He was certainly as long in body, though lower in stature; and his copious mane gave him a truly formidable appearance. He was of that variety which the Hottentots and boors distinguish by the name of the *black lion*, on account of the blacker colour of the mane, and which is said to be always larger and more dangerous than the other, which they call the *pale lion* (vaal leeuw.) Of the courage of a lion I have no very high opinion, but of his majestic air and movements, as exhibited by this animal, while at liberty in his native plains, I can bear testimony. Notwithstanding the pain of a wound, of which he must soon afterwards have died, he moved slowly away with a stately and measured step.

"At the time when men first adopted the lion as the emblem of courage, it would seem that they regarded great size and strength as indicating it; but they were greatly mistaken in the character they have given to this indolent, skulking animal, and have overlooked a much better example of true courage, and of other virtues also, in the bold and faithful dog."

Mr. Burchell, as we may learn from the foregoing extract, is not inclined to maintain the courage of the African lion, whatever impression he may have had of his extraordinary physical strength. The natural habits of the lion are certainly those of treachery; he is not disposed, under any circumstances, to meet his prey face to face; and he is particularly unwilling to encounter man when he crosses him in the full blaze of day. The inability of his eye (in common with most others of the cat tribe) to bear a strong light, may account in a great degree for this circumstance, which has probably brought upon him much of the reproach of being a skulking, cowardly animal. But we apprehend that there were periods in the history of African colonization when the lion was of a bolder nature in his encounters with mankind; that the dread of fire-arms has become, in some degree, a habit of the species; and that he has sagacity, or hereditary instinct, to know that a flash and a loud sound is often followed by a speedy death or a grievous injury. One of the most remarkable examples of the audacity of a lion is to be found in the Journal of a Settler at the Cape, more than a century ago. The first settlement of the Dutch at Cape Town was in the year 1652: the site which they selected was on the southern edge of Table Bay, and the number of the settlers amounted only to a hundred persons. In half a century the colonists had greatly increased, and had driven the native Hottentots a considerable distance into the interior, amongst dry and barren tracts. This is the ordinary course of colonization. In 1705, the Landdrost,* Jos. Sterreberg Kupt, proceeded on a journey into the country, to procure some young oxen for the Dutch East India Company;—and he has left a

* A local magistrate.

very interesting Journal of his expedition, which has been translated from the original Dutch, and published by the Rev. Dr. Philip, in his truly valuable Researches in South Africa. The account which the Landdrost gives of the adventure of his company with a lion, is altogether so curious, that we extract it without abridgement :—

"Our wagons, which were obliged to take a circuitous route, arrived at last, and we pitched our tent a musket-shot from the kraal ; and after having arranged everything, went to rest, but were soon disturbed : for about midnight the cattle and horses, which were standing between the wagons, began to start and run, and one of the drivers to shout, on which every one ran out of the tent with his gun. About thirty paces from the tent stood a lion, which, on seeing us, walked very deliberately about thirty paces farther, behind a small thorn-bush, carrying something with him, which I took to be a young ox. We fired more than sixty shots at that bush, and pierced it stoutly, without perceiving any movement. The southeast wind blew strong, the sky was clear, and the moon shone very bright, so that we could perceive everything at that distance. After the cattle had been quieted again, and I had looked over everything, I missed the sentry from before the tent, Jan Smit, from Antwerp, belonging to the Groene Kloof. We called as loudly as possible, but in vain,—nobody answered ; from which I concluded that the lion had carried him off. Three or four men then advanced very cautiously to the bush, which stood right opposite the door of the tent, to see if they could discover anything of the man, but returned helter-skelter, for the lion, who was there still, rose up, and began to roar. They found there the musket of the sentry, which was cocked, and also his cap and shoes.

" We fired again about a hundred shots at the bush, (which was sixty paces from the tent and only thirty paces from the waggons, and at which we were able to point as at a target,) without perceiving any thing of the lion, from which we concluded that he was killed or had run away. This induced the marksman, Jan Stamansz, to go and see if he was there still or not, taking with him a firebrand. But as soon as he approached the bush the lion roared terribly and leapt at him ; on which he threw the firebrand at him, and the other people having fired about ten shots, he retired directly to his former place behind that bush.

" The firebrand which he had thrown at the lion had fallen in the midst of the bush, and, favoured by the strong south-east wind, it began to burn with a great flame, so that we could see very clearly into and through it. We continued our firing into it ; the night passed away, and the day began to break, which animated every one to aim at the lion, because he could not go from thence without exposing himself entirely, as the bush stood directly against a steep kloof. Seven men, posted on the farthest waggons, watched him to take aim at him if he should come out.

" At last, before it became quite light, he walked up the hill with the man in his mouth, when about forty shots were fired at him without hitting him, although some were very near. Every time this happened he turned round towards the tent, and came roaring towards us ; and I am of opinion, that if he had been hit, he would have rushed on the people and the tent.

" When it became broad day-light, we perceived, by the blood and a piece of the clothes of the man, that the lion had taken him away and carried him with him. We also found, behind the bush, the

place where the lion had been keeping the man, and it appeared impossible that no ball should have hit him, as we found in that place several balls beaten flat. We concluded that he was wounded, and not far from this. The people therefore requested permission to go in search of the man's corpse in order to bury it, supposing that, by our continual firing, the lion would not have had time to devour much of it. I gave permission to some, on condition that they should take a good party of armed Hottentots with them, and made them promise that they would not run into danger, but keep a good look-out, and be circumspect. On this seven of them, assisted by forty-three armed Hottentots, followed the track, and found the lion about half a league farther on, lying behind a little bush. On the shout of the Hottentots, he sprang up and ran away, on which they all pursued him. At last the beast turned round, and rushed, roaring terribly, amongst the crowd. The people, fatigued and out of breath with their running, fired and missed him, on which he made directly towards them. The captain, or chief head of the kraal, here did a brave act in aid of two of the people whom the lion attacked. The gun of one of them missed fire, and the other missed his aim, on which the captain threw himself between the lion and the people so close, that the lion struck his claws into the caross (mantle) of the Hottentot. But he was too agile for him, doffed his caross, and stabbed him with an assagai.* Instantly the other Hottentots hastened on, and adorned him with their assagais, so that he looked like a porcupine. Notwithstanding this he did not leave off roaring and leaping, and

* The generous bravery of this man towards strangers offers a striking refutation of the calumnies against the Hottentot race, which the Dutch colonists employed to defend their cruel and treacherous persecutions.

bit off some of the assagais, till the marksman Jan Stamansz fired a ball into his eye, which made him turn over, and he was then shot dead by the other people. He was a tremendously large beast, and had but a short time before carried off a Hottentot from the kraal and devoured him."

In the Chapter on the "Objects of Menageries," we have noticed the dulness of the sense of hearing in the lion—the difficulty of awakening him—and the want of presence of mind which he displays if he be so awakened. It is this peculiarity which enables the Bushmen of Africa to keep the country tolerably clear of lions, without encountering any great danger in their exertions. Dr. Philip has well described it:—"The wolf and the tiger generally retire to the caverns and the ravines of the mountains, but the lion is most usually found in the open plain, and in the neighbourhood of the flocks of antelopes, which invariably seek the open country, and which manifest a kind of instinctive aversion to places in which their powerful adversary may spring upon them suddenly and unexpectedly. It has been remarked of the lion, by the Bushmen, that he generally kills and devours his prey in the morning at sunrise, or at sunset. On this account, when they intend to kill lions, they generally notice where the spring-bucks are grazing at the rising of the sun; and by observing, at the same time, if they appear frightened and run off, they conclude that they have been attacked by the lion. Marking accurately the spot where the alarm took place, about eleven o'clock in the day, when the sun is powerful, and the enemy they seek is supposed to be fast asleep, they carefully examine the ground, and finding him in a state of unguarded security, they lodge a poisoned arrow in his breast. The moment the lion is thus struck, he springs from his lair, and bounds off as helpless

as the stricken deer. The work is done ; the arrow of death has pierced his heart, without even breaking the slumbers of the lioness which may have been lying beside him ; and the Bushman knows where, in the course of a few hours, or even less time, he will find him dead, or in the agonies of death."*

We have thus traced the African lion as he appears to the traveller in solitary districts of that immense continent, and where the presence of man may, in some sort, be considered an intrusion upon his legitimate empire. But the lion does not confine his range to the desert plains, trusting for a supply of food to the herds of antelopes and wild asses which live far away from the abodes of mankind. In the country of the Namaaquas, where there are numbers of Dutch settlers, he is often found prowling around the herds of the colonists. Mr Barrow tells an interesting anecdote of the escape of a Hottentot from a lion, which pursued him from a pool of water where he was driving his cattle to drink, to an aloe tree, in which the man remained for twenty-four hours, while the lion laid himself down at the foot. The perseverance of the beast was at length worn out by his desire to drink ; and in his temporary absence to satisfy his thirst, the Hottentot fled to his home about a mile off. The lion, however, returned to the aloe tree, and tracked the man within three hundred paces of his house.

Mr. Pringle, who had extraordinary opportunities of observing the habits of the half-civilized natives of Southern Africa, and of becoming acquainted with the characteristics of the wild beasts with which that part of the world abounds, has given us a very good description of a lion-hunt, in which he and several of his countrymen, all somewhat inexperienced in such

* Philip's South Africa, vol. ii.

adventures, was engaged. Mr. Pringle was a settler on the eastern frontier of the Cape Colony; and in 1822 was residing on his farm, or "location," at Bavian's River. We should deprive his account of a lion-hunt of its interest, if we attempted to give it in any other than his own words :—

"One night a lion, that had previously purloined a few sheep out of my kraal, came down and killed my riding horse, about a hundred yards from the door of my cabin. Knowing that the lion, when he does not carry off his prey, usually conceals himself in the vicinity, and is very apt to be dangerous by prowling about the place in search of more game, I resolved to have him destroyed or dislodged without delay. I therefore sent a messenger round the location, to invite all who were willing to assist in the enterprise, to repair to the place of rendezvous as speedily as possible. In an hour every man of the party (with the exception of two pluckless fellows who were kept at home by the women,) appeared ready mounted and armed. We were also reinforced by about a dozen of the 'Bastaard' or Mulatto Hottentots, who resided at that time upon our territory as tenants or herdsmen, —an active and enterprising, though rather an unsteady, race of men. Our friends the Tarka boors, many of whom are excellent lion-hunters, were all too far distant to assist us—our nearest *neighbours* residing at least twenty miles from the location. We were, therefore, on account of our own inexperience, obliged to make our Hottentots the leaders of the chase.

"The first point was to track the lion to his covert. This was effected by a few of the Hottentots on foot. Commencing from the spot where the horse was killed, they followed the *spoor** through grass and gravel and brushwood, with astonishing ease and dexterity, where

* The Hottentot name for a footmark.

an inexperienced eye could discern neither footprint nor mark of any kind,—until, at length, we fairly tracked him into a large *bosch*, or straggling thicket of brushwood and evergreens, about a mile distant.

"The next object was to drive him out of this retreat, in order to attack him in close phalanx, and with more safety and effect. The approved mode in such cases is to torment him with dogs till he abandons his covert, and stands at bay in the open plain. The whole band of hunters then march forward together, and fire deliberately, one by one. If he does not speedily fall, but grows angry and turns upon his enemies, they must then stand close in a circle, and turn their horses rear-outward; some holding them fast by the bridles, while the others kneel to take a steady aim at the lion as he approaches, sometimes up to the very horses' heels—couching every now and then, as if to measure the distance and strength of his enemies. This is the moment to shoot him fairly in the forehead, or some other mortal part. If they continue to wound him ineffectually till he waxes furious and desperate; or if the horses, startled by his terrific roar, grow frantic with terror, and burst loose, the business becomes rather serious, and may end in mischief—especially if all the party are not men of courage, coolness, and experience. The frontier Boors are, however, generally such excellent marksmen, and withal so cool and deliberate, that they seldom fail to shoot him dead as soon as they get within a fair distance.

"In the present instance, we did not manage matters quite so scientifically. The Bastaards, after recounting to us all these and other sage laws of lion-hunting, were themselves the first to depart from them. Finding that the few indifferent hounds we had made little impression on the enemy, they divided themselves into two or three parties, and rode round the jungle, firing into the spot where the dogs were barking round him, but

without effect. At length, after some hours spent in thus beating about the bush, the Scottish blood of some of my countrymen began to get impatient; and three of them announced their determination to march in and beard the lion in his den, provided three of the Bastaards (who were superior marksmen) would support them, and follow up their fire, should the enemy venture to give battle. Accordingly, in they went (in spite of the warnings of some more prudent men among us,) to within fifteen or twenty paces of the spot where the animal lay concealed. He was couched among the roots of a large evergreen bush, with a small space of open ground on one side of it; and they fancied, on approaching, that they saw him distinctly, lying glaring at them from under the foliage. Charging the Bastaards to stand firm and level fair should *they* miss, the Scottish champions let fly together, and struck—not the lion, as it afterwards proved, but a great block of red stone, beyond which he was actually lying. Whether any of the shot grazed him is uncertain, but, with no other warning than a furious growl, forth he bolted from the bush. The pusillanimous Bastaards, in place of now pouring in their volley upon him, instantly turned, and fled helter-skelter, leaving him to do his pleasure upon the defenceless Scots—who, with empty guns, were tumbling over each other, in their hurry to escape the clutch of the rampant savage. In a twinkling he was upon them, and with one stroke of his paw dashed the nearest to the ground. The scene was terrific! There stood the lion with his foot upon his prostrate foe, looking round in conscious power and pride upon the bands of his assailants—and with a port the most noble and imposing that can be conceived. It was the most magnificent thing I ever witnessed. The danger of our friends, however, rendered it at the moment too terrible to enjoy either the grand or the ludicrous part of the

picture. We expected every instant to see one or more of them torn in pieces ; nor, though the rest of the party were standing within fifty paces with their guns cocked and levelled, durst we fire for their assistance. One was lying under the lion's paw, and the others scrambling towards us in such a way as to intercept our aim at him. All this passed far more rapidly than I have described it. But luckily the lion, after steadily surveying us for a few seconds, seemed willing to be quits with us on fair terms ; and with a fortunate forbearance, (for which he met but an ungrateful recompense,) turned calmly away, and driving the snarling dogs like rats from among his heels, bounded over the adjoining thicket like a cat over a footstool, clearing brakes and bushes twelve or fifteen feet high as readily as if they had been tufts of grass, and, abandoning the jungle, retreated towards the mountains.

" After ascertaining the state of our rescued comrade, (who fortunately had sustained no other injury than a slight scratch on the back, and a severe bruise in the ribs, from the force with which the animal had dashed him to the ground,) we renewed the chase with Hottentots and hounds in full cry. In a short time we again came up with the enemy, and found him standing at bay under an old mimosa tree, by the side of a mountain-stream, which we had distinguished by the name of Douglas Water. The dogs were barking round, but afraid to approach him, for he was now beginning to growl fiercely, and to brandish his tail in a manner that showed he was meditating mischief. The Hottentots, by taking a circuit between him and the mountain, crossed the stream and took a position on the top of a precipice overlooking the spot where he stood. Another party of us occupied a position on the other side of the glen ; and placing the poor fellow thus between two fires, which confused his attention and prevent[illegible]

retreat, we kept battering away at him, till he fell, unable again to grapple with us, pierced with many wounds.

"He proved to be a full grown lion of the yellow variety, about five or six years of age. He measured nearly twelve feet from the nose to the tip of the tail. His fore leg below the knee was so thick that I could not span it with both hands; and his neck, breast, and limbs appeared, when the skin was taken off, a complete congeries of sinews."*

We have thus contemplated the lion, as described by intelligent travellers and close observers; and we have seen the urgent necessity by which he is driven to the destruction of animal life, and the terrible powers by which he accomplishes that destruction. As the objects of his appetite, and the means which he employs for its gratification, are in themselves upon an ample scale, and thus fill the mind with an idea of great suffering inflicted by equal ferocity, so do we feel an instinctive shuddering in reading of herds put to flight—of some one trembling victim borne off to be torn to pieces by the beast in his lair—of man even suddenly deprived of existence by his desperate onset. Yet the same power and the same ferocity are constantly displayed before our eyes, though upon a smaller scale. The cat which springs upon the mouse is as formidable in its ability to injure, within its peculiar range, as the lion which carries away the antelope from his companions. The same instincts guide each to the same destruction of the lives of others of the animal creation. Throughout all nature we see the like necessities producing the like effects; and those necessities have been considered to form part of the general design, which has thus established a sort of counterpoise to the power and preponderance of any

* Notes to Pringle's Ephemerides.

one individual condition of existence. At any rate, we can have no doubt, from an examination of the physical structure of carnivorous animals, that in the destruction of life they fulfil the laws of their nature; and, however imperfectly we may understand the ends of those laws, we cannot be insensible to the perfection of the means by which they are carried into execution.

The invariable analogy between the teeth and the digestive organs of quadrupeds forms one of the most beautiful studies of Comparative Anatomy. The teeth that are made for tearing and cutting flesh, and fitted into jaws of great strength, incapable of lateral motion, but closing together like a pair of shears, are always accompanied with a stomach of less complicated structure than that which is fitted for the more difficult digestion of vegetable substances, particularly of grass, the most indigestible of all. In quadrupeds which devour their prey before absolute death has taken place—while the flesh is not yet set and the blood still warm—the stomach is of the most simple structure. In such animals, also, the intestines are much shorter than in those which feed entirely or partly on vegetables. For instance, in the lion those intestinal parts which are called by anatomists the *colon* and *cœcum*, are three feet nine inches long; in the goat, a much smaller animal, they are twenty feet nine inches.* This simple stomach, and these short intestines, are given to animals that are carnivorous, because the gastric juice of the stomach is sufficient for the purpose of digestion, without any more complicated process. There is no doubt that, by habit, a carnivorous quadruped, a domestic cat for instance, may be brought to eat vegetable food; but an invariable preference will be given by it to flesh. Upon the same principle of natural preference, a young hawk, which is fitted by the construction of

* Home, vol. i. p. 469.

its stomach for eating flesh, will *cast* (as the falconers term it)—that is, will bring up the contents of its stomach—if two or three oats are mingled with its meat. We see, therefore, that if the teeth of a lion, or a panther, were able to bruise grass, as those of the ruminating animals are, their stomachs would be incapable of digesting it ; just in the same way that a sheep or a cow, if its teeth could tear flesh, would be rendered sick by eating that substance. To follow up the same mode of reasoning, the structure of the stomach of the lion being simpler than that of the hyæna, we have to inquire what difference this circumstance produces in their habits ; and we find the difference to be, that the one prefers to seize a living body for its food—the other is attracted by a putrid carcase. In the conformation of each animal we have principally to seek for the reason of its actions.

With these facts before us, we cannot doubt that, in the natural state of the lion, the tiger, the leopard, and other quadrupeds of the cat tribe, animal food is not only necessary to their existence, but that their principal faculties must be directed to the object of capturing that food. It would be contrary to the evidence we have constantly before us of the completeness with which Nature works, to imagine that this ruling desire should be constantly harassing the beast of prey, and that he should be provided with imperfect means for its gratification. An examination of the structure of the lion, with reference to the admirable mechanism by which he is enabled to preserve his existence, cannot fail to lead the mind to a conviction of the entire manifestation of Design in this, as in every other work of the creation.

The lion, as we have seen, principally lives in the plains, and is always found where there are large herds of wild antelopes and quaggas feeding together, in that fellowship which is characteristic of each

species. To all these animals he is an object of unceasing dread. It is supposed by the agitation which oxen display when a lion is near them that they can scent him at a considerable distance. Whatever may be his physical strength, therefore, and we know that it is prodigious, it is evident he could not accomplish his purposes by strength alone. The instinctive fear of the creatures upon which he preys, would be constantly called into action by their keen sight and acute scent; and they would remove to some distant part before the destroyer could reach them. The lion, too, as well as the tiger, and others of the same species, seldom runs. He either walks, or creeps, or, for a short distance, advances rapidly by great bounds.* It is evident, therefore, that he must seize his prey by stealth; that he is not fitted for an open attack; and that his character is necessarily that of great power united to considerable wariness in its exercise.

Every one, almost, is familiar with the roar of the lion. It is a sound of terror, and produces an appalling effect. It is said by travellers that it sometimes resembles the sound which is heard at the moment of an earthquake; and that he produces this extraordinary effect by laying his head upon the ground, and uttering a half-stifled growl, by which means the noise is conveyed along the earth.† The instant this roar is heard by the animals who are reposing in the plains, they start up with alarm; they fly in all directions; they rush into the very danger which they seek to avoid. This fearful sound, which the lion utters, is produced by the great comparative size of the larynx,‡ the prin-

* Wilson's Illustrations of Zoology.

† Burchell, vol. ii.

‡ That part of the throat which forms the upper part of the *trachea* (wind-pipe.) It is composed of several cartilaginous rings, which are moved by powerful muscles.

cipal organ of voice in all animals.* He utters it to excite that fear which is necessary to his easy selection of an individual victim.

The lion, as well as all of the cat tribe, takes his prey at night ; and it is necessary, therefore, that he should have peculiar organs of vision. In all those animals which seek their food in the dark, the eye is usually of a large size, to admit a great number of rays ; and that part which is called the *choroides* reflects, instead of absorbing, the light. The power of seeing in the dark, which the cat tribe possesses, has always appeared a subject of mystery ; and it is natural that it should be so, for man himself sees with more difficulty in the dark than any other animal : he has a compensation in his ability to produce artificial light. There were formerly two opinions on the subject of the cat's eye : the one that the external light only is reflected ; the other that light was generated in the eye itself. Professor Bohn, of Leipsic, made experiments, however, which proved that, when the external light is wholly excluded, none can be seen in the cat's eye ; and it is now established that the illumination is wholly produced by the external rays of light, which, after being concentrated by those parts which are called the *cornea* and the *crystalline lens*, are reflected in a brilliant concave mirror at the bottom of the eye, called the *tapetum*.† This effect may be constantly seen in the domestic cat. In the strong light of day, the *iris* is contracted, so that a very small quantity of light is admitted to this mirror ; but in the twilight the *iris* opens, and then the mirror being completely exposed, the eye glares in

* "The size of the larynx is proportionate to the strength of the sounds which the animals utter. The absolute size of the larynx of the whale and the elephant is the largest, but relatively the larynx of the lion has a still greater circumference."—Notes to Blumenbach's Comp. Anat., by Lawrence and Coulson, 1827.

† See Home, vol. iii. p. 243.

the manner with which we are all familiar. The construction, therefore, of the eye of the cat tribe enables them to collect in one focus whatever rays of light there may be: and few places are so dark but that some light may be found—as we know, when we have gone into a cellar, where the darkness at first appears impenetrable, but where, even with our differently-constructed organ of vision, we soon distinguish objects without difficulty. This peculiar eye, therefore, is necessary to the lion to perceive his prey; and he creeps towards it with a certainty which nothing but this distinct nocturnal vision could give.

Every one must have observed what are usually called the *whiskers* on a cat's upper lip. The use of these in a state of nature is very important. They are organs of touch. They are attached to a bed of close glands under the skin; and each of these long and stiff hairs is connected with the nerves of the lip.* The slightest contact of these whiskers with any surrounding object is thus felt most distinctly by the animal, although the hairs are themselves insensible. They stand out on each side, in the lion, as well as in the common cat, so that, from point to point, they are equal to the width of the animal's body. If we imagine, therefore, a lion stealing through a covert of wood in an imperfect light, we shall at once see the use of these long hairs. They indicate to him, through the nicest feeling, any obstacle which may present itself to the passage of his body; they prevent the rustle of boughs and leaves, which would give warning to his prey if he were to attempt to pass through too close a bush;—and thus, in conjunction with the soft cushions of his feet, and the fur upon which he treads (the retractile claws never coming in contact with the ground,) they enable him to move towards his victim with a stillness greater even than

* Cuvier, Anat. Comp. Leçon. XIV.—Art. VI.

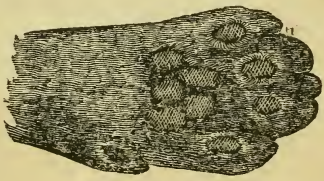
that of the snake, who creeps along the grass, and is not perceived till he has coiled round his prey.

We must carry our minds to the point when all these preliminary arrangements for bringing the lion within reach of some devoted animal have been successful. The quagga is quietly listening for the sound of his scattered companions. At some twenty feet from him, is the lion crouching and preparing for the spring. The flexibility of his vertebral column allows him to throw himself upon his prey with prodigious swiftness, by the exercise of muscular power; and this power is so great, that the compression of the muscles upon the principal artery of the shoulder would produce a derangement of the animal's system, if that circumstance were not provided against by a most singular and beautiful expedient. The *os humeri* (the bone of the shoulder) is perforated in the lion tribe, to give a more direct course to the brachial artery, that it may not be compressed, by the muscles, when called into extraordinary action by the violence with which their prey is seized.* The muscles of the lion's fore-leg are unusually firm, and so are those of the thigh of a fighting cock.† This is a peculiar character of the muscles of animals whose habits are those of combat or of catching prey. Flexible as the joints of the larger species of the cat tribe are, they are knit together by the remarkable strength of the muscles; and no other provision would at once produce that pliancy and firmness which particularly characterise the limbs of the lion in the act of seizing his victim, and give both a grace and a power to all his ordinary movements.

The weight of the lion's body, as compared with his size, is very remarkable; and this is produced by the extraordinary density of his muscles, and the compactness of his principal bones. The force there-

* Home, vol. i. p. 76. † Home, vol. i. p. 34.

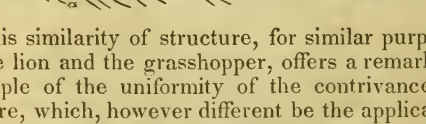
fore, with which he must alight after a bound of fifteen or twenty feet must be obvious. The compensation against the jar produced by such a leap is remarkable. In the treatise on Animal Mechanics, in the Library of Useful Knowledge, it is shown how the number of bones in the human foot, arranged into a great number of joints, produces the elasticity which is required in its complicated movements. The lion's foot has nearly the same number of bones as the human, answering, of course, the same end.* But as the cat tribe are exposed, from their modes of life, to much more violent jars upon the foot than man, so are they furnished with a peculiar provision still further to break the force of a fall or of a leap. In the domestic cat, we constantly observe the natural facility with which the tribe balance themselves when springing from a height; and this facility has given rise to the popular opinion that a cat will always fall upon its feet. The power of balancing themselves, whether leaping to or from an elevation, is in some degree produced by the flexibility of the heel, the bones of which have no fewer than four joints. But the softness with which the cat tribe alight on their feet, arises from an admirable arrangement of that Wisdom which fits every creature for its peculiar habits. In the middle of the foot there is placed a large ball, or pad, in five parts, formed of an elastic substance, intermediate in structure between cartilage and tendon; and at the



* Home, vol. i. p. 125

base of each toe is a similar pad. It is impossible to imagine any mechanism more calculated to break the force of a fall.

The same mechanism has been discovered in several species of grasshoppers and locusts, whose habit of jumping is well known; and in which the structure is evidently for the purpose of taking off the jar, when the body of the insect is suddenly brought from a state of motion to a state of rest. In a species of *gryllus* brought from Abyssinia by Mr. Salt, the feet are made up of three joints: on the under surface of the first are three pair of globular cushions, filled with an elastic fibrous substance, looser in its texture towards the circumference, which renders it more elastic; under the second joint is one pair of similar cushions; and under the last joint, immediately between the claws, is a large oval sucker.* This sucker is for the purpose of supporting the insect against gravity,—a mechanism which the fly possesses.† A British species of grasshopper (*acryolium biguttulum*) has the same cushions, and the same oval sucker, as the grasshopper from Abyssinia. The following engraving of the foot of this species is magnified two thousand five hundred times.



This similarity of structure, for similar purposes, in the lion and the grasshopper, offers a remarkable example of the uniformity of the contrivances of Nature, which, however different be the application, always attain the required end by the simplest means.

* Home, vol. iii. p. 202.

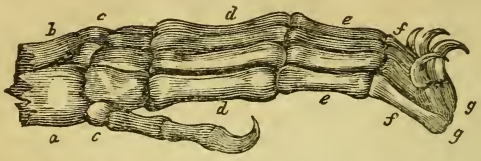
† See Preliminary Treatise to the Library of Useful Knowledge.

We have seen in an extract from Mr. Burchell's travels, that when his dogs attacked a lion, two of them were killed by a very slight movement of the lion's paw. We must attribute this circumstance to the remarkable hardness of the bone of the fore leg. The texture of this bone is so compact, for the purpose of resisting the powerful contraction of the muscles, that the substance will strike fire with steel.* This hardness is produced, according to the testimony of Mr. Hatchett, a distinguished chemist, by the degree of closeness of the fibres of which the bone is composed. From its extraordinary hardness, it was thought that the bone of the lion's fore leg was of a peculiar chemical composition; but Mr. Hatchett has also shown that it only contains a larger proportion of phosphate of lime than is found in ordinary bones. Different bones of other animals vary also in their degree of compactness, and are hard in proportion to the weight which the bone is required to support, or the exertion which it is destined to make. Thus the fore feet of a race-horse and of a deer are very small, but unusually hard. The hardness of the bone of the lion's fore-leg is, therefore, not only necessary to bear the great muscular strain upon it, but it forms a powerful instrument of destruction. It will batter in a horse's skull, as if it were a sledge-hammer.

From the examination of the domestic cat, we know that its claws do not touch the ground when it walks, but we also know that they are capable of extension when it seizes its prey. This is a peculiar property of all the cat tribe, and a most remarkable one it is. To explain the arrangement which nature has provided for extending the claws of the lion, as well as all the cat tribe, we must be somewhat minute and must illustrate the subject by a figure

* Home, v. 354.

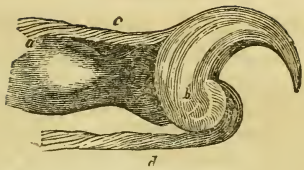
of the upper surface of the bones of the lion's fore-foot.*



a and *b* are the extremities of the two lower bones of the leg; *c c*, the *carpal* bones (corresponding with those of the human wrist ;) *d d*, the four *metacarpal* bones (corresponding with those of the human hand from the wrist to the knuckles ;) *e e*, the four bones of the first *phalanx* of toes ; *ff*, the four bones of the second *phalanx ; g g*, the extreme bones of the toes. Into these bones the claws are inserted by what is called an immoveable articulation—that is, the bone has a cavity, with a protuberance at its centre ; and the claw, which is also a bony substance, fills up the cavity, and has an indentation, or notch, to receive the protuberance. The extreme bones of the toes, *g g*, into which the claws are immoveably fixed, move upon a joint connecting each of them with the bones *ff;* and this motion has a range of nearly a semi-circle, so that the claws may be pointed upward, as we see them in the engraving, or downward, as they are when the animal seizes his prey. To shew how this singular movement is produced, we must refer to the next engraving.

a is a bone of the second *phalanx*, corresponding with *f* in the former figure; this is articulated with the last bone, *b*, to which the claw is attached : *c* is an elastic ligament, acting the office of a spring, by

* This figure, as well as the next, and the magnified view of the lion's tongue, are taken from "Mémoires pour servir à l'histoire naturelle des Animaux ; dressés par M. Perrault." Amsterdam, 1758.



which the claw is held up when it is in a state of rest, as well as when the animal walks. "Muscular contraction is employed when parts are to be moved from a state of rest; but is not always used to bring them back to that state, or to support them in it. On many such occasions, a less expensive means is adopted, by the introduction of elastic ligament."* To bring down the claws, when they are required for the seizure of prey, muscular action is employed; *d* is the tendon of a powerful muscle: when, therefore, the animal desires to employ his claws, the muscle is contracted by an effort of the will; the tendon attached to the muscle pulls down the claw, and thus gives a half rotary motion to the last joint of the toe; and the elastic ligament yields to the stronger action of the muscle. When the object is accomplished, and the muscle is at rest, the ligament, acting as a spring, pulls up the claw. Can any machinery be more perfect? could any devised by human skill answer the purpose as easily, as simply, and as effectually?†

* Home, i. 49.

† For a precise anatomical description of this contrivance, see Perrault's Memoirs. The following is Cuvier's account of the mechanism:—

"The form of the last and of the second *phalanges* is very remarkable in the cat tribe, animals which are endowed with the faculty of raising their claws, so that they may not wear them by friction with the ground, in moving about.

"The second *phalanx* is triangular. Two of its faces are lateral, and the third placed solewise. On the inner side, or that which is next the thumb, the lateral face presents a kind of contortion, in such wise that the middle part is oblique, and as it were hollow.

An extraordinary instance of a variation of this mechanism, adapted to the peculiar wants of the animal, is presented by the sloth (*bradypus.*) In the lion, the extension of the claws is only occasional; in the sloth they are required to be extended for constant use. The position of the elastic ligaments, and of the muscles, is therefore reversed. In the sloth, the ligaments draw down the talons, and the muscles raise them.*

The strength of the lion's jaws—the power of the muscles which move the lower jaw—and the construction of his teeth for tearing, cutting, and crushing animal matter—are popularly known. We shall describe the teeth more particularly when we give the generic distinctions of the cat tribe.

There is one peculiar distinction of the lion, as well as of all his *congeners*, (animals of the same

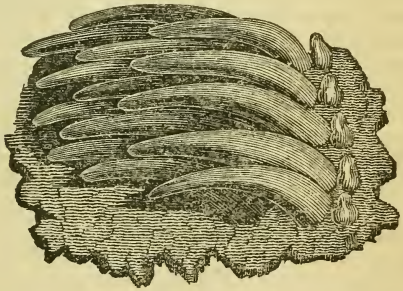
"The third *phalanx*, or that which bears the claw, is still more singular in its form, in its joints, and its movements.

"The figure of this bone is that of a hook formed of two parts the one projecting forwards, bent, sharp, and pointed, receives the nail, which nearly corresponds with it in shape. The base of this first portion forms a kind of bony hood, into which the lower part (base) of the nail is received, as in a sheath, but in such manner that it cannot be pushed backwards. The second part of the hook is placed behind: it rises almost perpendicularly, and is only jointed with its lower portion; it extends below the joint by two additional parts, (*appendices*,) which serve for a point of connexion with the muscles, whose province it is to thrust out the claw, or, which amounts to the same, to bend the *phalanx*. The joints of this bone, in fact, are disposed in such a manner, that when extended, which it is capable of being far beyond the right line, it is really reversed upwards and backwards on the second *phalanx* of the inner or radial side, in such manner, that the lateral hollow in the second phalanx serves as a case for the third; and that, in this state, the point of the talon, so far from touching the ground, is actually turned towards the sky.

"This reversed position is that of repose, in which the phalanx is retained in its place by two sorts of ligaments, viz., the capsular ligaments, and the two lateral ones, which proceed from the second phalanx."—*Anat. Com. Leçon* II. *Art.* VII.

* Home, i. 133.

family,) which deserves a particular attention. The most obtuse sense of this branch of carnivorous quadrupeds is that of taste. According to Desmoulins, the lingual nerve of the lion is not larger than that of a middle-sized dog. The tongue of all animals of the cat kind is an organ of mastication, as well as of taste. Observe a lion with a bone : whatever flesh his teeth leave on it is scraped away by the sharp and horny points, inclining backwards, of his tongue. This circumstance would render it impossible that the lion, or any of the larger beasts of the same family, could lick the hand of a man, as we read in some fables, without tearing away the skin. The following is a greatly magnified representation of a portion of the lion's tongue.



We have thus, somewhat more particularly than will be our usual practice, gone through several of the most striking peculiarities of the lion's structure. His conformation is evidently designed for the destruction of animal life. We have noticed the roar by which he rouses his prey ; the eye by which he sees it in the dark ; the sensitive whiskers, and the cushioned foot, by which he creeps upon it without noise ; the great physical force by which the spring upon the victim is performed, and the provision

against any injury from the exercise of that force, the powerful instrument with which he strikes his prey, in itself most hard and massive, and armed with retractile claws; the teeth, the jaw, the prickly tongue, by which he is enabled to satisfy his appetite. All these properties form a part of the condition of his existence; and it should be borne in mind that the very nature of his food has a tendency to preserve his character unaltered; to support his enormous muscular strength; to perpetuate his sanguinary habits. The study of Comparative Anatomy, from which science we have collected this account of some of the peculiarities of the structure of the lion, constantly presents objects of similar interest. Galen, when studying human anatomy, was so struck with the perfection with which all the parts of the human arm and hand are adapted to one another, that he composed a hymn to the Deity, expressing his admiration of a piece of so much excellence. The more we extend our researches into the animal kingdom, the more shall we be struck with this extraordinary adaptation of the parts of living bodies to their respective uses; the more shall we be convinced, by our own imperfect knowledge, of the perfection of that Wisdom and Power, whose works are as marvellous as they are unbounded.

Before we dismiss the subject of lions, we must regard them more particularly as to the character of the species being affected by confinement.

Bell, a traveller in Asia, whose work was published in 1762, tells us that the sovereign of Persia has, on days of audience, two large lions chained on each side of the passages to the rooms of state, led there by keepers in chains of gold. This is a species of subjection of which we have very few other examples. We have seen, however, a lion (Nero) exhibited in a

travelling menagerie (Wombwell's) that permitted all sorts of liberties to be taken with him, even by strangers. As many as a dozen persons have gone with safety into his den ; and some have been rash enough, under the direction of the keeper, to put their heads within his jaws. On the other hand, the natural ferocity of some lions is never completely subdued. About two years ago, an individual that we saw last autumn in a small menagerie, killed a man, who being newly appointed to the charge of the beasts, ventured into the lion's cage, and struck him there. This same animal tore the scalp off a boy's head, who incautiously approached too near his cage, in September 1828, at Bartholomew fair. The Bengal lion, and the two African lions at present in the Tower, are very gentle, and allow great familiarities from their keepers. The Asiatic lioness, taken as a cub at the same time with the lion, has had whelps,* and as is common with the species, is particularly anxious for their safety, and, therefore, apparently ferocious.

A few years ago there was a remarkable exhibition at Warwick, of two combats between lions and dogs. The tempers of the individual animals were very different. The one, an exceedingly gentle creature, (Nero, whom we have just mentioned,) could not understand that the dogs seriously meant to attack him ; and he bore their onset with the greatest patience. The other, of a fiercer and more unsubdued disposition (Wallace,) would not endure the liberties of the fierce bull-dogs that were set upon him ; and he very soon made a fearful havock amongst them. This cruel and disgraceful experiment had its precedents. The Romans delighted in such brutal exhibitions. Under the Consulate lion-fights were frequent. Sylla caused one hundred to engage together; Pompey, six hundred ; and Cæsar, four hundred.

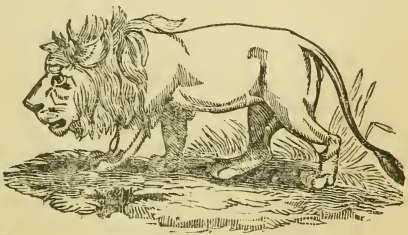
* The lioness goes with young 108 days.

The emperors also found pleasure in these exhibitions of barbarian magnificence. Adrian, it is said, often caused a hundred lions to be destroyed in the Circus; and Antoninus and Marcus Aurelius were equally prodigal in providing such savage excitements for the appetite of the people. It may be judged from these relations, which we find in the Roman historians, that lions were infinitely more abundant in ancient times than they are now. Shaw, a traveller in Africa, observes that the Romans carried fifty times as many lions, from Libya, in one year, to combat in their amphitheatres, as were to be found in the whole country at the time he wrote. This is a necessary effect of the increase of the human race, and the progress of those arts which denote the advance of mankind in knowledge. The universal civilization of the earth, which it is not extravagant to believe may be accomplished at some distant period, will exterminate, except as subjects for curious research, all the races of those ferocious creatures which, in the total or partial absence of the dominion of man, are undisturbed possessors of the forests and plains.

There are many well authenticated narratives of the affection of lions for individuals of the human species; and these might lead us to believe that the story was not altogether a fable, which is told by Aulus Gellius, of Androdus, (the Androcles of Buffon,) a Roman slave, being known and caressed in the Circus, by a lion who was destined to tear him in pieces; but who recollected that the unfortunate man had cured a wound in his leg, in his native deserts. That lions subdue their instincts to protect and foster weaker animals, particularly dogs, is well known. The old lion in the Tower, who spared a spaniel thrown into his cage to be devoured, and lived happily with it for several years, is still in the recollection of some persons. A similar circumstance is related by Jean Macquet, a traveller in the reign of

Henry IV. of France, who had seen a dog at Morocco, under the protection of several lions, to whom he had been thrown for a meal. Saint Pierre very prettily describes the lion of Versailles, who, in 1793, lived most happily with a dog :—"their friendship," he says, "is one of the most touching exhibitions that Nature can offer to the speculations of a philosopher."*

Within a few years, the keepers of menageries have been successful in procuring the continuance of the species, from a lion and lioness in confinement. Several full-grown examples have been reared, in this way, in England. The cubs are always playful and harmless ; but as they approach to maturity, they invariably put on the natural habits of the race, and are, generally, as little to be trifled with as those which are whelped in the woods. The nurture of these animals under confinement must, however, have a tendency not only to soften their character, but to render their forms less perfectly adapted to the habits of their native state. The following is a sketch made in 1813, of a lion which had been reared in a menagerie. He was then three years old, and he not only had a subdued expression of countenance, but his back had become distorted, in consequence of his having been pent up in a wretched den.



* Mém. sur la Ménagerie.

Chapter VIII.

THE TIGER, LEOPARD, OCELOT, LYNX, PUMA, AND DOMESTIC CAT.

The Tiger. Felis Tigris.—Linnæus.

The above is the portrait of a remarkably fine tiger, exhibited, in 1829, at Atkins's Menagerie. This creature is particularly gentle, permitting liberties from its keepers which are not so often allowed by the tiger in captivity, as by the lion. Nothing can be more beautiful than the power and freedom of its movements, or better indicate that force and agility, which have so long been the dread of the inhabitants of our Indian possessions.

The Tiger, commonly called the Royal Tiger, is a native of Bengal, the kingdoms of Siam and of Tonquin, of China, of Sumatra, indeed of all the countries of southern Asia, situated beyond the Indus, and extending to the north of China. The species has long been most abundant in those countries; while the Asiatic lion, on the contrary, has only been known within a few years. The average height of the tiger is about three feet, and the length nearly six feet. The species, however, varies considerably in size; and individuals have often been found much taller and longer than the lion. The peculiar markings of the tiger's skin are well known. On a ground of yellow, of various shades in different specimens, there is a series of black transverse bars, varying in number from twenty to thirty, and becoming black rings on the tail, the number of which is, almost invariably, fifteen. There are oblique bands, also, on the legs. The pupils of the eye are circular.

Buffon has described the tiger, and so have many other naturalists, as a creature which, in comparison with the lion, deserves all the hatred of mankind, and none of their admiration. "To pride, courage, and strength, the lion joins greatness, clemency, and generosity; but the tiger is fierce without provocation, and cruel without necessity." Thus writes the most eloquent of naturalists, taking up prejudices instead of attending to facts, and using his real information for the support of a false theory. Similar in anatomical construction, the tiger and the lion are similar in their habits; they are equally cats, driven by their conformation to the destruction of animal life. The tiger, perhaps, is somewhat more dangerous, for he has more activity than the lion: the clemency and generosity of both are doubtless equal. There is, however, this difference in their characters, which

is in favour of the lion. He assists the female in rearing their young ;—the tiger deserts her. The tiger species will also destroy each other, and a female has been known to eat her cubs ; but even this is not uncommon with the domestic cat. Redi, in his work "*de Generatione Insectarum*," says, describing a menagerie, "Among several curious foreign animals was a female tiger, with a cub a few months old in the same cage. This kind mother, upon coming towards Florence, whether out of sport or fury I will not undertake to say, seizing the cub in her teeth, broke its leg, and severed it from the joint. When she perceived the limb thus separated from the body, she devoured it most voraciously, although there was abundance of flesh in the cage besides." Yet the general affection of the tigress for her cubs cannot be doubted. Captain Williamson, in his work on "Oriental Field Sports," mentions that two tiger cubs were brought to him while stationed in the Ramghur district in India. They had been found, with two others, by some country people, during the absence of the mother. Being put in a stable, they made a loud noise for several nights, till at length the tigress arrived to their rescue, and replied to them by the most fearful howlings. The cubs were at last let loose, in apprehension that their mother would break in ; and in the morning it was found that she had carried them off to the neighbouring jungle.

As European civilization has advanced in India, the race of tigers, the scourge of the country, has gradually become less numerous. The Hindoos seldom of themselves attempt to hunt the tiger ; although he invades their houses and carries off their cattle, and very often the people themselves, whenever there is a village in the neighbourhood of an uncleared waste overgrown with reeds and bushes, called a jungle. The caste of Shecarries, whose business is hunting,

are not numerous enough to accomplish this destruction effectually. The active courage of Europeans will generally remove the evil. Some years ago the island of Cossimbuzar was almost completely cleared of the tigers by a German named Paul, of great muscular strength and undaunted courage, who devoted himself to their extermination. This man is said to have shot five tigers in one day. His rifle never failed; and his success was such in this destruction of the scourge of the country, that the enormous overgrown wastes which had almost been surrendered without a struggle to those ferocious creatures, were soon changed into fertile agricultural districts. The East India Company formerly offered a donation of ten rupees (about twenty shillings) for every tiger that was destroyed within their provinces.

The tiger, like the lion, springs upon its prey from an ambush; and, in most cases, he is easily terrified by any sudden opposition from human beings. A party in India were once saved from a tiger, by a lady opening an umbrella as she saw him about to spring. Our readers may remember the attack of a tigress upon the horses of the mail, on Salisbury plain, a few years ago. The creature had escaped from a travelling menagerie, and, not forgetting her natural habits, sprung upon the leaders as they passed her. The guard would have shot her, but her keepers drove her off, and she escaped to a hay-stack, under which she crept, and was retaken without difficulty. In narrow passes in Hindoston, travellers have often been seized by tigers; or a bullock, or horse has fallen a victim to the ferocity of the prowling beast. Horses have such a dread of the tiger, that they can scarcely ever be brought to face him. Hunting him, therefore, on horseback, is a service of great danger; the elephant, on the contrary, though considerably agitated, will stand more

steadily while his rider anticipates the fatal spring by a shot which levels the tiger to the earth. One peculiarity of the tiger is his willingness to take to the water, either when pursued, or in search of the prey which he espies on the opposite bank of a river.

The late excellent Bishop Heber, in his journal, has given a narrative of the mode in which a tiger-hunt is conducted, full of picturesque effect, and striking from its minute detail:

"At Kulleanpoor, the young Raja Gourman Singh mentioned, in the course of conversation, that there was a tiger in an adjoining tope which had done a good deal of mischief; that he should have gone after it himself had he not been ill, and had he not thought it would be a fine diversion for Mr. Boulderson, the collector of the district, and me. I told him I was no sportsman, but Mr. Boulderson's eyes sparkled at the name of tiger, and he expressed great anxiety to beat up his quarters in the afternoon. Under such circumstances, I did not like to deprive him of his sport, as he would not leave me by myself, and went, though with no intention of being more than a spectator. Mr. Boulderson, however, advised me to load my pistols for the sake of defence, and lent me a very fine double barrelled gun for the same purpose. We set out a little after three on our elephants, with a servant behind each howdah, carrying a large chatta, which, however, was almost needless. The Raja, in spite of his fever, made his appearance too, saying that he could not bear to be left behind. A number of people, on foot and horseback, attended from our own camp and the neighbouring villages, and the same sort of interest and delight was evidently excited which might be produced in England by a great coursing party. The Raja was on a little female elephant, hardly bigger than the Durham ox, and almost as shaggy as a

poodle. She was a native of the neighbouring wood, where they are generally, though not always, of a smaller size, than those of Bengal and Chittagong. He sat in a low howdah,* with two or three guns ranged beside him, ready for action. Mr. Boulderson had also a formidable apparatus of muskets and fowling-pieces, projecting over his mohout's head. We rode about two miles across a plain covered with long jungly grass, which very much put me in mind of the country near the Cuban. Quails and wild-fowl arose in great numbers, and beautiful antelopes were seen scudding away in all directions."

The Bishop then describes the beating of the jungle, the rushing out of two curious animals of the elk kind, called the "mohr," and the growing anxiety of all the people engaged in the hunt. He then proceeds thus :—

"At last the elephants all drew up their trunks into the air, began to roar, and stamp violently with their fore-feet. The Raja's little elephant turned short round, and in spite of all her mohout (her driver) could say or do, took up her post, to the Raja's great annoyance, close in the rear of Mr. Boulderson. The other three (for one of my baggage elephants had come out too, the mohout, though unarmed, not caring to miss the shew) went on slowly, but boldly, with their trunks raised, their ears expanded, and their sagacious little eyes bent intently forward. 'We are close upon him,' said Mr. Boulderson; 'fire where you see the long grass shake, if he rises before you.' Just at that moment my elephant stamped again violently. 'There, there,' cried the mohout, 'I saw his head.' A short roar, or rather loud growl followed, and I saw immediately before my elephant's head the motion of some large animal

* The howdah is a seat somewhat resembling the body of a gig, and is fastened by girths to the back of the elephant.

stealing through the grass. I fired as directed, and a moment after, seeing the motion still more plainly, fired the second barrel. Another short growl followed; the motion was immediately quickened, and was soon lost in the more distant jungle. Mr. Boulderson said, 'I should not wonder if you hit him that last time; at any rate we shall drive him out of the cover, and then I will take care of him.' In fact at that moment the crowd of horse and foot spectators at the jungle side, began to run off in all directions. We went on to the place, but found it was a false alarm; and, in fact, we had seen all we were to see of him, and went twice more through the jungle in vain. . . .

"I asked Mr. Boulderson in our return, whether tiger-hunting was generally of this kind, which I could not help comparing to that chase of bubbles which enables us in England to pursue an otter. In a jungle, he answered, it must always be pretty much the same, inasmuch as, except under very peculiar circumstances, or when a tiger felt himself severely wounded, and was roused to revenge by despair, his aim was to remain concealed, and to make off as quietly as possible. It was after he had broken cover, or when he found himself in a situation so as to be fairly at bay, that the serious part of the sport began, in which case he attacked his enemies boldly, and always died fighting. He added, that the lion, though not so large or swift an animal as the tiger, was generally stronger and more courageous. Those which have been killed in India, instead of running away when pursued through a jungle, seldom seem to think its cover necessary at all. When they see their enemies approaching, they spring out to meet them, open-mouthed, in the plain, like the boldest of all animals, a mastiff dog. They are thus generally shot with very little trouble; but

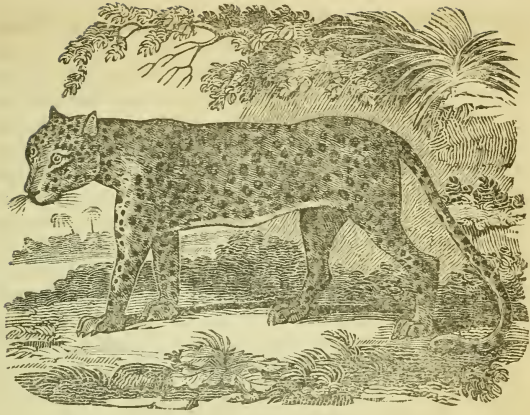
if they are missed, or only slightly wounded, they are truly formidable enemies. Though not swift, they leap with vast strength and violence ; and their large heads, immense paws, and the great weight of their body forwards, often enable them to spring on the head of the largest elephants, and fairly pull them down to the ground, riders and all. When a tiger springs on an elephant, the latter is generally able to shake him off under his feet, and then woe be to him. The elephant either kneels on him and crushes him at once, or gives him a kick which breaks half his ribs, and sends him flying perhaps twenty paces. The elephants, however, are often dreadfully torn ; and a large old tiger sometimes clings too fast to be thus dealt with. In this case it often happens that the elephant himself falls, from pain, or from the hope of rolling on his enemy ; and the people on his back are in very considerable danger both from friends and foes, for Mr. Boulderson said the scratch of a tiger was sometimes venomous, as that of a cat is said to be. But this did not often happen ; and, in general, persons wounded by his teeth or claws, if not killed outright, recovered easily enough."

There appears to be no greater difficulty in rendering the tiger docile than the lion. As the sovereign of Persia has his tame lions, so have the faquirs, or mendicant priests of Hindostan, their tame tigers. These will accompany them in their walks, and remain, without attempting to escape, in the neighbourhood of their huts. The tigers in the English menageries appear, with a few exceptions, to be ordinarily under as complete control as the species which, for so long a time, has been supposed to possess all the generous virtues of the *genus felis.*

Several keepers of menageries, during the last few

years, have succeeded in obtaining a mixed breed between the lion and the tiger. Mr. Atkins has exhibited cubs, produced at various times, by the union of the lion with the tigress. In September last, we saw two lion-tiger cubs in his exhibition, which had been whelped at Edinburgh, on the 31st December, 1827. Their general colour was not so bright as that of the tiger species, and the transverse bands were rather more obscure. The little creatures were very playful, and the mother was most tractable, suffering the keeper to enter the den, and exhibit her cubs to the spectators.

The tigress produces three or four cubs at a litter.



The Leopard. Felis Leopardus.—Linnæus.

In the garden of the Zoological Society is a pair of beautiful leopards ; and also a single male. Each of these creatures appears particularly gentle ; and we have seen a lady, somewhat incautiously, pat the single male upon the head, when the creature purred like a cat, and exhibited the most unequivocal marks of delight. Mrs. Bowditch, the widow of the distinguished naturalist and traveller, has a tame leopard, of which she has published a very interesting account in Loudon's Magazine of Natural History. Leopards, however, like all of their race, appear to be of exceedingly uncertain tempers ; and we have more than one instance recorded of their attacking individuals, when they have been incautiously left at liberty. The celebrated John Hunter had a fortunate escape, in a contest with two leopards that were confined in a yard of his house. They broke loose, attacked some dogs, and were climbing the wall, when the great anatomist heard the uproar ; and,

rushing into the yard, seized upon both of them, and secured them without injury.

The average length of the leopard is under four feet, and his height about two feet. The general colour of his skin, and the arrangement of the spots, is exceedingly beautiful. The yellowish fawn ground, which gradually becomes a perfect white on the under parts of the body, is covered with black spots, of a round or oval form, on the head, neck, limbs, and back ; while on the sides, and part of the tail, the spots unite in ten ranges of distinct roses, surrounding a central area of a somewhat deeper colour than the general ground. In the *Panther*, there are only six or seven ranges of these roses.*

The natural habits of the leopard, like those of all the cat tribe, are compounded of ferocity and cunning. He preys upon the smaller animals, such as antelopes, sheep, and monkeys ;—and he is enabled to secure his food with great success, from the extraordinary flexibility of his body. The leopards in the Tower, who have a tolerably large cage, bound about with the quickness of a squirrel, so that the eye can hardly follow their movements. In Africa, they are sometimes found of extraordinary size and rapacity. Their relative size principally distinguishes the leopard and the panther, the latter being ordinarily the larger. M. Cuvier considers them distinct species ; although they are doubtless often mistaken by travellers, from their great similarity.

We have been favoured, by a gentleman who was formerly in the civil service at Ceylon, with the following description of an encounter with a leopard or panther, which in India are popularly called tigers:—

" I was at Jaffna, at the northern extremity of the Island of Ceylon, in the beginning of the year 1819 ; when, one morning, my servant called me an hour or two before my usual time, with, ' Master, master !

* Cuvier, Règne Animal.

people sent for master's dogs—tiger in the town !' Now, my dogs chanced to be some very degenerate specimens of a fine species, called the *Poligar* dog, which I should designate as a sort of wiry-haired greyhound, without scent. I kept them to hunt jackals ; but tigers are very different things : by the way, there are no real tigers in Ceylon ; but leopards and panthers are always called so, and by ourselves as well as by the natives. This turned out to be a panther. My gun chanced not to be put together ; and while my servant was doing it, the collector, and two medical men, who had recently arrived, in consequence of the cholera morbus having just then reached Ceylon from the continent, came to my door, the former armed with a fowling-piece, and the two latter with remarkably blunt hog-spears. They insisted upon setting off without waiting for my gun, a proceeding not much to my taste. The tiger (I must continue to call him so) had taken refuge in a hut, the roof of which, as those of Ceylon huts in general, spread to the ground like an umbrella ; the only aperture into it was a small door, about four feet high. The collector wanted to get the tiger out at once. I begged to wait for my gun ; but no—the fowling-piece (loaded with ball, of course) and the two hog-spears were quite enough. I got a hedge-stake, and awaited my fate, from very shame. At this moment, to my great delight, there arrived from the fort an English officer, two artillery-men, and a Malay captain ; and a pretty figure we should have cut without them, as the event will shew. I was now quite ready to attack, and my gun came a minute afterwards. The whole scene which follows took place within an enclosure, about twenty feet square, formed, on three sides, by a strong fence of palmyra leaves, and on the fourth by the hut. At the door of this the two artillery-men planted them-

selves; and the Malay captain got at the top, to frighten the tiger out, by worrying it—an easy operation, as the huts there are covered with cocoa-nut leaves. One of the artillery-men wanted to go in to the tiger, but we would not suffer it. At last the beast sprang; this man received him on his bayonet, which he thrust apparently down his throat, firing his piece at the same moment. The bayonet broke off short, leaving less than three inches on the musket; the rest remained in the animal, but was invisible to us: the shot probably went through his cheek, for it certainly did not seriously injure him, as he instantly rose upon his legs, with a loud roar, and placed his paws upon the soldier's breast. At this moment, the animal appeared to me to about reach the centre of the man's face; but I had scarcely time to observe this, when the tiger, stooping his head, seized the soldier's arm in his mouth, turned him half round staggering, threw him over on his back, and fell upon him. Our dread now was, that if we fired upon the tiger, we might kill the man: for a moment there was a pause, when his comrade attacked the beast exactly in the same manner as the gallant fellow himself had done. He struck his bayonet into his head; the tiger rose at him—he fired; and this time the ball took effect, and in the head. The animal staggered backwards, and we all poured in our fire. He still kicked and writhed; when the gentlemen with the hog-spears advanced, and fixed him, while some natives finished him, by beating him on the head with hedge-stakes. The brave artillery-man was, after all, but slightly hurt: he claimed the skin, which was very cheerfully given to him. There was, however, a cry among the natives that the head should be cut off: it was; and, in so doing, *the knife came directly across the bayonet.* The animal measured scarcely less than

four feet from the root of the tail to the muzzle. There was no tradition of a tiger having been in Jaffna before; indeed, this one must have either come a distance of almost twenty miles, or have swam across an arm of the sea nearly two in breadth; for Jaffna stands on a peninsula on which there is no jungle of any magnitude."

The leopard of India is called by the natives the "Tree Tiger," from its habit of ascending a tree, when pursued, or for the purpose of enabling it to spring securely on its prey. It is doubtless able to effect this ascent, by the extraordinary flexibility of its limbs, which give it the power of springing upward ;—for, in the construction of the feet, it has no greater facilities for climbing than the lion or the tiger. It cannot clasp a branch like the bear, because the bone called the *clavicle* is not sufficiently large to permit this action. The Indian hunters chase the leopard to a tree ; but even in this elevated spot it is a task of great difficulty to shoot him ; for the extraordinary quickness of the creature enables him to protect himself by the most rapid movements. The Africans catch this species in pitfalls, covered over with slight hurdles, upon which there is placed a bait. In some old writers on Natural History there are accounts of the leopard being taken in a trap, by

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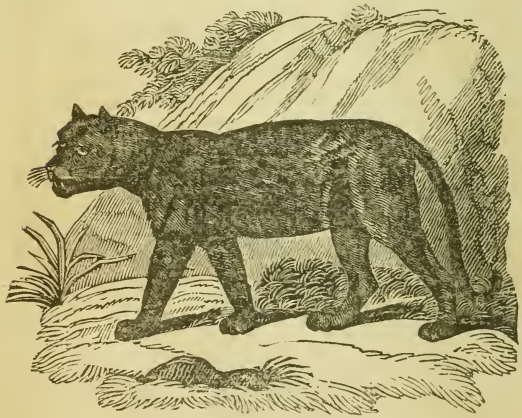
means of a mirror, which, when the animal jumps against it, brings down the door upon him. This story may have received some sanction from the disposition of the domestic cat, when young, to survey her figure in a looking glass.

In Wombwell's Menagerie there was recently exhibited a species of leopard, of a deep black colour, with blacker spots. This animal was somewhat smaller than leopards in general, and of very ferocious appearance. Black leopards, or panthers, are commonly found in the East Indies; but it is considered that the colour is only accidental: and it is affirmed, that a black and a yellow cub have been taken from the same nest.



Black Panther. Felis melas.—PERON.

The Hunting Leopard, or Chetah (*Felis Jubata*,) which is trained in India for the chase of antelopes, differs in one striking peculiarity from the family of cats. His claws are very slightly retractile. This

species has been imperfectly known in Europe, with regard to its generic character, till of late years ; although Bernier, Tavernier, and other oriental travellers, have described the uses to which it was applied. Gesner, an early writer on natural history, tells us that Francis I., of France, had a leopard, which he employed in the chase, and which an attendant carried before him on a horse.

Ocelot.—Felis pardalis, Linnæus.

One of the most beautiful of cats is the Ocelot. It is smaller than the leopard, being generally about three feet in length and eighteen inches in height. Upon a gray ground, slightly tinged with fawn, are marked longitudinal bands, of which the margins are perfectly black, and the central parts of a deeper fawn than the general ground. These margins of

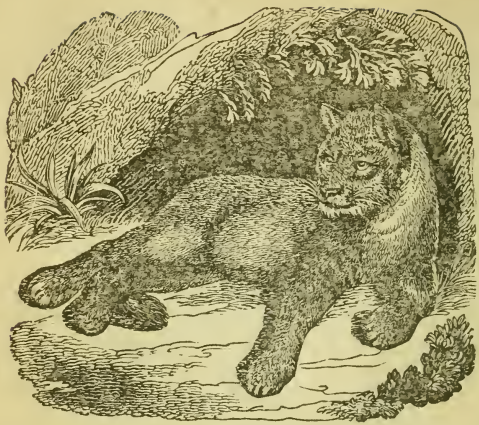
black, inclosing a deep fawn, become black lines and spots, on the neck, and head, and on the outer sides of the limbs. From the top of the head towards the shoulders there pass several diverging black bands; and on the top of the back, the line is quite continuous. The tail is spotted upon a ground like that of the body.

The ocelot in the garden of the Zoological Society died during the late severe winter. The above portrait is from the specimen in the Tower, which is remarkable for the shortness of the tail. This animal was presented to the King by Sir Ralph Woodford, late governor of Trinidad. It is tolerably docile; and does not seize its food with the violence which distinguishes nearly every other species of the cat tribe. This ocelot is usually fed upon rabbits and birds, upon which it principally preys in a state of nature.

The Zoological Society has also been unfortunate in the death of a very beautiful specimen of the *Canadian Lynx*. This animal, when we saw it in the autumn, appeared very lively, and particularly irascible when looking at visiters. It made a hissing noise, and exhibited its beautiful teeth with a considerable expression of anger. The eye was, however, not so brilliant as popular opinion represents that of the lynx to be. This is one of the fables of antiquity which accurate observation has exploded. Amongst the hunters of America, the lynx is called the wild-cat. Major Denham says, that it is a timid animal, and offers little resistance when attacked. It is easily killed by a blow on the back. The sharp ears, tipped with a tuft of black hair, peculiarly distinguish the lynx from the other cats. Its legs are thick and furry; and its tail, also tipped with black, is short. Its average height is

about sixteen inches, and its length about two feet six inches. The Canadian lynx is not spotted ; and the fur is of a reddish-gray mottled appearance, except on the under part of the body, which is lighter. This species principally preys on the common hares of the country ; and is found in such quantities by the fur-gatherers, that, as we have before mentioned, nine thousand skins have been imported in one year by the Hudson's Bay Company.

Canadian Lynx.—Felis Canadensis, GEOFF



Puma.—Felis concolor, Linnæus.

The above engraving is a portrait of one of the most beautiful of the cat tribe in the Zoological Gardens. This creature appears perfectly mild and playful; sleeping, for the most part, in the day; but sometimes rising when interrupted by a stranger, and occasionally knocking about a little ball in its cage.

The puma is a native of the New World, and is principally found in Paraguay, Brazil, and Guiana. He is, however, often seen in the United States; but there, as in every other part of the world, civilization daily lessens the range of those animals which live by the destruction of others. The puma, in its natural state, is a sanguinary creature, attacking the smaller quadrupeds, and often destroying more than can be necessary for the satisfaction of his appetite. He is alarmed at the approach of men or of dogs,

and flies to the woods, where he mounts trees with great ease. He belongs to the same division of cats as the lion, by the essential character of the unspotted colour of his skin, which is of a reddish-yellow, or silvery-fawn; but, unlike the lion, he is without a mane, and the tail has no tuft. The average length of the puma is about four feet, and its height about two feet. It stands lower on the legs than the lion, and the head is round and small.

The puma, which was long called the American lion, though a large animal, is not an object of great dread to the natives of the regions to which he belongs. He is easily tamed. D'Azara, the naturalist, had one which was as sensible to caresses as the common cat; and Mr. Kean, the tragedian, had a domesticated puma, which was much attached to him. Although there have been instances of the puma attacking, and even destroying the human species; in South America they have an instinctive dread of any encounter of this nature. Capt. Head, in his "Journey across the Pampas," has the following interesting anecdote of the puma, which, in common with other travellers, he incorrectly calls the lion:

"The fear which all wild animals in America have of man is very singularly seen in the Pampas. I often rode towards the ostriches and zamas, crouching under the opposite side of my horse's neck; but I always found that, although they would allow any loose horse to approach them, they, even when young, ran from me, though little of my figure was visible; and when one saw them all enjoying themselves in such full liberty, it was at first not pleasing to observe that one's appearance was everywhere a signal to them that they should fly from their enemy. Yet it is by this fear that 'man hath dominion over the beasts of the field,' and there is no animal in South America that does not acknowledge this instinctive

feeling. As a singular proof of the above, and of the difference between the wild beasts of America and of the Old World, I will venture to relate a circumstance which a man sincerely assured me had happened to him in South America.

"He was trying to shoot some wild ducks, and, in order to approach them unperceived, he put the corner of his poncho (which is a sort of long, narrow blanket) over his head, and crawling along the ground upon his hands and knees, the poncho not only covered his body, but trailed along the ground behind him. As he was thus creeping by a large bush of reeds, he heard a loud, sudden noise, between a bark and a roar: he felt something heavy strike his feet, and instantly jumping up, he saw, to his astonishment, a large lion actually standing on his poncho; and, perhaps, the animal was equally astonished to find himself in the immediate presence of so athletic a man. The man told me he was unwilling to fire, as his gun was loaded with very small shot; and he therefore remained motionless, the lion standing on his poncho for many seconds: at last the creature turned his head, and walking very slowly away about ten yards, he stopped and turned again: the man still maintained his ground, upon which the lion tacitly acknowledged his supremacy, and walked off"

We have thus described the structure and appearance, and traced the habits, of several species of the cat tribe ; and have particularly seen, that the invariable characteristic of the race—of whatever form, of whatever colour, of whatever physical power, the individual variety may be—is a ruling desire for the destruction of animal life. In some species, this desire is carried into action with more boldness, in others with more cunning ; but in all there is a mixture of cunning and boldness, more or less mingled with a suspicion which assumes the appearance of fear, the unchanging property of all treacherous natures. The creature which lies at our fire-side, leaps upon our table, sits upon our knee, purs round our legs, attends us at our meals, never forsakes our houses, and altogether appears as if it could only exist in dependence upon man—the Domestic Cat—is precisely of the same nature as the leopard or the ocelot. In this case, unlike that of the dog, there is no doubt which is the original head of the domesticated stock. The wild cat of the European forests is the tame cat of the European houses : the tame cat would become wild if turned into the woods ; the wild cat at some period has been domesticated, and its species has been established in almost every family of the old and new continent.

The domestic cat has been multiplied with the multiplication of the small noxious animals that follow the progress of civilization. As man erects houses, these animals seek therein shelter and food. Without the cat, this would have been, and would still be, a most serious evil. The fecundity of mice would make them the most troublesome inmates of a family ; and their attacks upon every eatable substance would cause a great diminution of the produce of human industry. It would be difficult to trace the period when the wild cat was first brought from

the woods, where it preys upon the birds, and field-mice, and leverets, and young rabbits, with as much avidity as the lion hunts after antelopes and oxen. But there must have been a period when it first occurred to man that the instincts of this animal might be subdued to his uses. In the ruder ages of society,—in the tenth and eleventh centuries, for instance,—we find domestic cats very scarce ; and laws were then passed against their mutilation, and other regulations made, which shew the importance attached to their preservation. In the Collection of Welsh Statutes (*Leges Walliæ*) may be found the value of a cat of every age, and of each degree of adroitness and vigour. The passion for animal food, or rather the desire to destroy a living animal, is the quality which makes the cat valuable to man. Domestication does not extinguish the passion ; for the pampered inmate of the parlour does not forget its nightly prowl through every part of a house where mice can come ; and the consequence is, that we are, to a great degree, unmolested by these troublesome visiters, who would be quite as offensive, though not so dangerous, as the numberless varieties of ferocious creatures which the dog has so materially assisted us in subduing or exterminating.

The Wild Cat (*felis catus*) is much about the size of the ordinary cat ; and is of a gray colour, marked with black stripes, longitudinal on the back, and transverse on the flanks ; the lips and soles of the feet black ; the tail marked with rings, with a black tip. The Domestic Cat (*felis catus domesticus*) has no essential external variation from the wild stock, except, perhaps, in the greater brilliancy of its colours. The lips and the soles of the feet are also constantly black, as well as the end of the tail. There is, however, this peculiarity in the domestic species ; it is not entirely carnivorous, for it will readily eat bread, and

other vegetable matter: and, following up the constant analogy between habit aud structure, we find the intestines of the tame proportionably longer than those of the wild variety. Domestic cats, too, will devour insects. We have often seen a cat catch flies: and we know one that ordinarily eats the black-beetle, (*blatta orientalis*,) which species is now as great a nuisance in London houses as the cock-chaffer (*melolantha vulgaris*) is in the fields, by feeding, while in the larva state, on the roots of corn. Mr. Howard, in his work on the climate of London, records the fact of a cat catching cock-chaffers and eating them. If this habit were general, the destruction of this troublesome insect would be more securely provided for, than was accomplished by the Spiritual Court of Lausanne, in 1479, when the offending insect was cited to answer for its mal-practices; and, although an advocate was assigned for its defence, was, after mature deliberation, placed under the *ban* of the Church.* Quadrupeds seldom prey upon insects, although the ant-eater is an exception, as well as the mole; and the common hedge-hog has lately been domesticated in London, for the more complete destruction of black-beetles than can be effected by cats or traps of glass.

It would be a singular inquiry, though somewhat difficult, to ascertain what qualities the cat has lost by domestication, and what it has acquired. Some of its instincts appear perfect as in the natural state—some more matured—and some nearly subdued. In a singular old work on natural history (*Bartholomæus de Proprietatibus Rerum*,) which was translated into English by Thomas Berthlet, and printed by Wynkyn de Worde as early as 1498, we have a very curious description of the cat, which sums up most of the

* Stettler's *Schweitzer Chronic.* (quoted in Blumenbach's Manual of Natural History.)

properties of the animal in a quaint and amusing way. For example :—" He is most like to the leopard, and hath a great mouth, and saw-teeth and sharp, and long tongue, and pliant, thin, and subtle ; and lappeth therewith when he drinketh, as other beasts do, that have the nether lip shorter than the over ; for, by cause of unevenness of lips, such beasts suck not in drinking, but lap and lick, as Aristotle saith, and Plinius also. And he is a full lecherous beast in youth, swift, pliant, and merry, and leapeth, and riseth on all thing that is tofore him ; and is led by a straw, and playeth therewith : and is a right heavy beast in age, and full sleepy, and lieth slyly in wait for mice ; and is ware where they bene more by smell than by sight, and hunteth and riseth on them in privy places ; and when he taketh a mouse, he playeth therewith, and eateth him after the play ; and is a cruel beast when he is wild, and dwelleth in woods, and hunteth there small wild beasts, as conies and hares." The same cruelty belongs to the domestic cat as the wild—that instinct is never subdued. But the range of its food is limited by its hereditary habits of domestication. There is no doubt that wild cats will seize on fish ; and the passionate longing of the domestic cat after that food is an evidence of the natural desire. We have seen a cat overcome her habitual reluctance to wet her feet, and seize an eel out of a pail of water. Dr. Darwin alludes to this propensity : —" Mr. Leonard, a very intelligent friend of mine, saw a cat catch a trout by darting upon it in a deep clear water, at the mill at Weaford, near Lichfield. The cat belonged to Mr. Stanley, who had often seen her catch fish in the same manner in summer, when the mill-pool was drawn so low, that the fish could be seen. I have heard of other cats taking fish in shallow water, as they stood on the bank. This seems to be a natural method of taking their prey,

usually lost by domestication, though they all retain a strong relish for fish." Some of their instincts are unchanged by domestication, although they have ceased to be of use ; and a habit of reasoning does not so completely become mixed with the instinct, as in the dog. All the species of the cat tribe cover up their dung. Most persons must have observed that cats effect this with ashes, earth, or whatever loose rubbish they can find near, a habit which renders them a great nuisance in gardens, particularly after seeds have been sown. From the great care with which, in such cases, they draw the mould together, going round and round the circle till they seem satisfied with their work, it might be concluded to be more a rational proceeding than one arising from instinct. But cats, when confined to a room or a paved yard, go through the very same process, scratching the wooden floor or the flag-stones, and going similar rounds, as in a garden, or a dust-pit ; whereas, had the animals possessed much rationality, they must have at once perceived the folly of such attempts.

The ability of cats to seize upon their ordinary prey, mice or birds, does not appear to lose anything by domestication. The extraordinary patience with which a cat will watch a mouse-hole, for hours, is, doubtless, a natural property. This determined bending of the will to one object is, probably, a principal cause of the fascination which some serpents possess. In a very agreeable book, recently published, " The Journal of a Naturalist," we find several instances of this power being exercised by hawks upon the smaller birds. The author of that Journal, says, " there can be no doubt of the fact, that instinctive terror will subdue the powers of some creatures, rendering them stupified and motionless at the sudden approach of danger." Cats, in some degree, are supposed to possess this

power of terrifying their prey. Montaigne gives a story illustrative of the notion :

"There was at my house, a little while ago, a cat seen watching a bird upon the top of a tree, and for some time they mutually fixed their eyes upon each other. At length, the bird let herself fall dead into the cat's claws, either dazzled and astonished by the force of imagination, or drawn by some attractive power in the cat. This is similar to the story told of the falconer who, having earnestly fixed his eyes upon a kite in the air, laid a wager that he would bring her down by the power of sight alone, and succeeded, as it was said ; for, when I borrow a tale of this kind, I charge it upon the conscience of those from whom I have it.*" There is no doubt that a mouse will sometimes suddenly yield itself to the power of its enemy. Montaigne very properly doubts the story of the falconer ; though the human eye has certainly great power, particularly in warding off the attack of a dog or a cow.

One of the most remarkable properties of a domestic cat is the anxiety with which it makes itself acquainted, not only with every part of its usual habitation, but with the dimensions and external qualities of every object by which it is surrounded. Cats do not very readily adapt themselves to a change of houses ; but we have watched the process by which one, whose attachment to a family is considerable, reconciles itself to such a change. He surveys every room in the house, from the garret to the cellar ; if a door is shut, he waits till it be opened to complete the survey ; he ascertains the relative size and position of every article of furniture ; and when he has acquired this knowledge, he sits down contented with his new situation. It appears necessary to a cat that

* Essays, i. 20.

he should be intimately acquainted with every circumstance of his position, in the same way that a general first examines the face of the country in which he is to conduct his operations. If a new piece of furniture, if even a large book or portfolio, is newly placed in a room which a cat frequents, he walks round it, smells it, takes note of its size and appearance, and then never troubles himself further about the matter. This is, probably, an instinctive quality ; and the wild cat may, in the same way, take a survey of every tree or stone, every gap in a brake, every path in a thicket, within the ordinary range of its operations. The whiskers of the cat, as we have mentioned in the case of the lion, enable it to ascertain the space through which its body may pass, without the inconvenience of vainly attempting such a passage.

The memory of a cat must be very strong, to enable it to understand this great variety of *local* circumstances, after a single observation. The same power of memory leads this animal, much as its affection may be doubted, to know the faces of individuals. We have seen a cat exhibit manifest delight upon the return of its master, or of a person from whom it had received peculiar kindness. There are several instances of strong attachment to the human race in cats, though in number and intensity they fall far short of the attachment of the dog. They have sometimes, also, great affection to other animals, which becomes a reciprocal feeling. The celebrated stallion, the Godolphin Arabian, and a black cat, were, for many years, the warmest friends. When the horse died, in 1753, the cat sat upon his carcase till it was put under ground ; and then, crawling slowly and reluctantly away, was never seen again, till her dead body was found in a hay-loft.* Stubbs

* Lawrence's History of the Horse, p. 109.

painted the portraits of the Arabian and the cat. There was a hunter in the late King's stables at Windsor, to which a cat was so attached, that whenever he was in the stable, the creature would never leave her usual seat upon the horse's back, and the horse was so well pleased with the attention, that to accommodate his friend, he slept, as horses will sometimes do, standing. This, however, was found to injure his health ; and the cat was at length removed to a distant part of the country.

The attachment of domestic cats to human individuals is by no means universal with the species, nor, indeed, is it very common. The cat, to a certain extent, knows the voice and person of its master ; and, what is singular, cats have antipathies to particular individuals. The effects of discipline upon the cat are very inferior to the influence of chastisement or caresses upon the dog. The dog, when he is beaten or reproved for a particular offence, seldom repeats it ; the cat, as far as we have seen, can never be prevented importuning for food, jumping upon you —sitting in your chair—clambering upon a table—tearing furniture—scratching up plants—however constantly it may be beaten for these annoyances. Cats may be taught to perform tricks, such as leaping over a stick, but they always do such feats unwillingly. There is at present an exhibition of cats in Regent-street, where the animals, at the bidding of their master, an Italian, turn a wheel, draw up a bucket, ring a bell, and, in doing these things, begin, continue, and stop, as they are commanded. But the *commencez*, *continuez*, *arrêtez*, of their keeper is always enforced with a threatening eye, and often with a severe blow ; and the poor creatures exhibit the greatest reluctance to proceed with their unnatural employments. They have a subdued and piteous

look; but the scratches upon their master's arms shew that *his* task is not always an easy one.

A strong affection for her young ordinarily prevails in the female cat; and the feeling has sometimes produced an unusual foresight. The following fact is mentioned to us as having recently occurred. A short time before a cat produced kittens, she was observed to hoard up several mice and young rats, which she did not quite kill, but lamed, so as to prevent their escaping. One day after dinner, when our informant was sitting with a friend, the cat bounced into the room in eager chase of one of her maimed prisoners—a young rat which had, as it appeared from the report of the servants, been some days under surveillance in a back court. The rat sprung up the window-curtain for safety, but being unable to retain its position, was soon recaptured. This was a refinement of cruelty which peculiarly marks the species; it was carrying the odious habit of torturing its prey, which is characteristic of the cat, to a disgusting extent.

It is by no means uncommon among the insect tribes to secure live prey for their future offspring. The ichneumon fly, for example, lays its eggs in the body of a live caterpillar, and the larvæ thence produced feed on it without killing it till their transformation into pupæ. The *sphex* also, or sand wasp, when it makes a nest, incloses in it a supply of live grubs, proportioned to the wants of the future offspring. The circumstance respecting the cat (which was verified in several instances) would not have been so remarkable had it occurred *after* she had had kittens; but the prospective provision, whether for her own or their subsistence, is well worthy of notice The same strength of maternal feeling sometimes induces cats which have lost their kittens, to continue for a week or two to bring mice and other provision to

their bed, in expectation of the return of the kittens. A gentleman informed us that more than a fortnight after his cat had been deprived of her kittens, she came in with a mouse, and searched all over the house for them with the prey, making a complaining noise.

These circumstances, which indicate the desire which the female cat has for the preservation of her young, are not incompatible with the well known fact of her rearing the young of other animals. The exercise of the maternal duties is always a strong gratification; and it is not therefore wonderful that if the opportunity is suddenly withdrawn, the desire should adapt itself to any accidental means of satisfaction, however strange. We have many instances of this. Mr. White gives two well known examples in his history of Selborne, of a cat supporting a leveret and squirrels; and Dr. Darwin has the following account of a similar circumstance:—"At Elford, near Lichfield, the Rev. Mr. Sawley had taken the young ones out of a hare which had been shot. They were alive; and his cat, which had just lost her own kittens, carried them away, as it was supposed, to eat them; but it presently appeared that it was affection, not hunger, which incited her, as she suckled them and brought them up as their mother."

The following anecdote, of a similar nature, has been communicated to us upon authority which we cannot doubt:—A cat and a bitch belonging to a lady chanced to have young at the same time. The cat, not liking the place assigned her for her kittens, carried them, without having been perceived, into a drawer containing clothes, which was soon afterwards pushed in and the kittens imprisoned in it. In the mean while, the bitch, having gone out of doors, was either stolen or killed, as she never re-

turned to her pups. These were found out, and adopted by the cat. A day or two after this singular adoption, the kittens were discovered in the drawer, so nearly starved that they all died except one within a week. The cat, however, continued to nurse both this one and her adopted pups till they were full grown.

One of the most remarkable peculiarities of the domestic cat is the property which its fur possesses of yielding electric sparks by rubbing. In frosty weather, this is occasionally very extraordinary. During the severe cold of January last, we several times received a very acute electrical sensation upon merely touching a large black cat lying before a fire. Mr. White says, speaking of the frost of 1785, "during these two Siberian days, my parlour-cat was so electric, that had a person stroked her, and been properly insulated, the shock might have been given to a whole circle of people."

It is a very prevalent notion that cats are fond of sucking the breath of infants, and consequently of producing disease and death. Upon the slightest reflection, nothing can be more obvious, than that it is impossible for cats to suck an infant's breath, at least so as to do it any injury; for even, on the supposition that they did so, the construction of their mouth must preclude them from interrupting the process of breathing by the mouth and the nose at the same time. The vulgar notion must have arisen from cats nestling about infants in beds and cradles to procure warmth. Cats are particularly solicitous to be comfortably placed as to temperature. In winter they get before the fire to sleep; in summer they seek the shade of a tree, where the air is fresh and cooling.

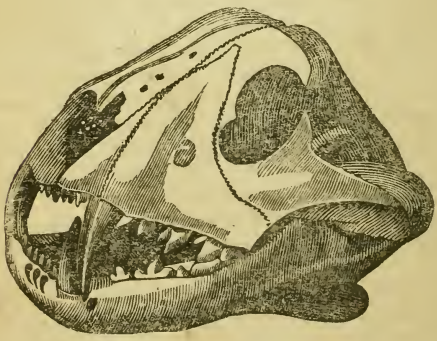
The cat ordinarily breeds thrice in a year, and goes with young fifty-five or fifty-six days. She brings four or five kittens, which she nourishes for

some weeks with great care. The average duration of a cat's life is about fifteen years.

The following is the scientific character of the carnivorous *genus Felis*, which is found in Europe Asia, Africa, and America, but which has not yet been recognised in Australasia :—

Arrangement of the teeth ;—
Incisors, $\frac{6}{6}$. Canine, $\frac{1-1}{1-1}$. Molar, $\frac{4-4}{3-3}$ or $\frac{3-3}{3-3}$.
Total, 30 or 28.

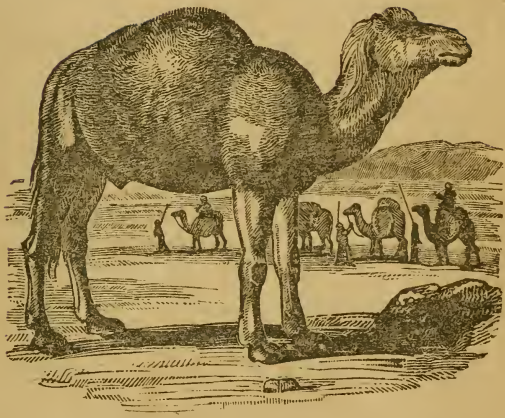
The head round ;—the tongue covered with sharp prickles, pointing backward ;—the ears pointed ;—the pupils of the eye sometimes contracting in a vertical line, sometimes in a circle ;—three toes on the hind feet, and four on the front,—each armed with a retractile claw, which is *completely* retractile on the fore-feet.



Skull of the Lion

Chapter VIII.

THE CAMEL



The Arabian Camel.—Camelus Dromedarius, Linnæus; *Dromadaire*, Buffon *et* G. Cuvier.

The inhabitants of London, and of other large towns of England, sometimes see the camel led along their streets for exhibition. The above is a portrait of a male camel, which was paraded through the metropolis in 1828. The Curators of the College of Surgeons, in 1805, bought a female camel in a dying state, which had been twenty years in England, and was then so infirm as hardly to be able to stand; it got up with difficulty, and almost immediately kneel-

ed down again. It was then twenty-eight years old —the ordinary duration of the camel's life, in Arabia, is forty or fifty years. The existence of such a creature is comparatively miserable, when it is led about the rough and often muddy pavements of our towns ; because its natural habits are completely altered, and its structure is ill adapted for such a change. The climate of England causes the animal to feel enfeebled, even with great care to protect it from variations of temperature. It limps along with difficulty, at a wretched pace; and appears a sluggish, indolent, feeble, and almost useless creature. It is true that it may be well-fed—have abundance of hay and water—and be sheltered at night from the cold; but this regular feeding and protection from the atmosphere are also not in conformity with its habits, because they are unsuited to its structure. The camel has been created with an especial adaptation to the region wherein it has contributed to the comfort, and even to the very existence, of man, from the earliest ages. It is constituted to endure the severest hardships with little physical inconvenience. Its feet are formed to tread lightly upon a dry and shifting soil ; its nostrils have the capacity of closing, so as to shut out the driving sand, when the whirlwind scatters it over the desert ; it is provided with a peculiar apparatus for retaining water in its stomach, so that it can march from well to well without great inconvenience, although they be several hundred miles apart. And thus, when a company of eastern merchants cross from Aleppo to Bussorah, over a plain of sand, which offers no refreshment to the exhausted senses, the whole journey being about eight hundred miles, the camel of the heavy caravan moves cheerfully along, with a burden of six or seven hundred weight, at the rate of twenty

miles a day ; while those of greater speed, that carry a man, without much other load, go forward at double that pace and daily distance. Patient under his duties, he kneels down at the command of his driver, and rises up cheerfully with his load : he requires no whip or spur during his monotonous march ; but, like many other animals, he feels an evident pleasure in musical sounds ; and, therefore, when fatigue comes upon him, the driver sings some cheering snatch of his Arabian melodies, and the delighted creature toils forward with a brisker step, till the hour of rest arrives, when he again kneels down, to have his load removed for a little while ; and if the stock of food be not exhausted, he is further rewarded with a few mouthfuls of the cake of barley, which he carries for the sustenance of his master and himself. Under a burning sun, upon an arid soil, enduring great fatigue, sometimes entirely without food for days, and seldom completely slaking his thirst more than once during a progress of several hundred miles, the camel is patient, and apparently happy. He ordinarily lives to a great age, and is seldom visited by any disease. And why is this ? He lives according to his peculiar nature ; whilst with us, as we sometimes see him in our streets, his nature is outraged, even by the greater care taken to provide for what are considered his physical wants.

The camel with one hump, which we ordinarily call the dromedary, has been reared at one place in Europe for two centuries : this place is Pisa, in Italy. His habits are there, to a certain extent, the same as in his native region ; but the soil and climate of Europe are ill adapted to his organization. The camels of Pisa have degenerated ; they are weaker than those of the East ; and their

lives are of comparatively short duration. This circumstance is a convincing proof that the natural locality of the camel is an arid and thirsty region, offering little vegetable food, and that little of the coarsest kind. That region comprises Arabia, all the northern district of Africa, which extends in length from Egypt to Mauritania, and in breadth from the Mediterranean sea to the river Senegal; Egypt, Abyssinia, Persia, Southern Tartary, and parts of India. Over this extensive region is the camel spread; and here he has formed the best possession of the people from the time of the patriarchs. He is called *Djemal* by the Arabs, and *Gamal* by the Hebrews. The Bactrian camel, with two humps, is much more rare; and this species is principally found in Turkistan, which is the ancient Bactria, and in Thibet, as far as the frontiers of China. The camels of Pisa have the advantage, at San Rossora, the place where they are reared, of a flat and sandy country, having brambles and low bushes, which administer, in some degree, to their natural habits. But still they are degenerated. They are not, by any means, completely naturalized; and, probably, will become more and more influenced by their peculiar situation, the farther the breed is removed from the original stock. The subject is altogether very curious; and, therefore, before we proceed to the contemplation of the camel in his native region, and trace his unchanging habits through several thousand years, we shall give a somewhat minute account of the camels of San Rossora. We are furnished with the materials for this in an interesting memoir, by M. Santi, Professor of Natural History at Pisa, which was published at Paris, in 1811, in that valuable and splendid monument of the advantages of an institution for the sys-

tematic study of Natural History, the "Annales du Muséum d'Histoire Naturelle."*

The camels of San Rossora are the property of the Government of Tuscany. The precise period of the establishment of this stud is not distinctly ascertained, though there are strong reasons for believing that it was originally formed by Ferdinand II. of Medici, a prince of Tuscany, whose cultivated mind led him to favour whatever he thought might be useful to the country, which he governed with much wisdom. Mr. Penn, in his work on Geology, states that the camels of Pisa have been reared there since the time of the Crusades; but he is evidently mistaken, as, in a chronicle of the Court of Tuscany, it is recorded that, in 1622, the first year of the reign of the Grand Duke Ferdinand II., the princes went to see a camel, which had arrived at Florence from Soria (Old Castile.) From this minute record we may reasonably conclude that the camel, at that period, was a rare animal; and if there had been camels previously in Tuscany, it is not very probable that this curiosity of the court would either have been excited or noticed. Indeed, there is a tradition amongst the camel keepers of San Rossora, that the breed was first established somewhat before the middle of the sixteenth century. One of these men, eighty-eight years of age, whose father and grandfather had also been employed to tend the camels, assured M. Santi that the breed which was first introduced had lasted about a hundred years. It appears, from an official document, that, in 1732, the stud was reduced to six females, when the Tuscan Government procured from Tunis thirteen male camels and seven female, making altogether thirteen couple. The stud was from this time much increased. In 1789 it consisted

* Tome xvii., p. 320.

of a hundred and ninety-six, males and females, and in 1810 of about a hundred and seventy.

The accounts of the natural history of the camel, and especially of its habits, which we find in eastern travellers, are somewhat vague; and this is to be ascribed to the extraordinary abundance in which the animal is found. The naturalist, or man of letters, who travels with a caravan consisting of many hundred camels, is struck with the general effect of objects so new and so extraordinary, without inquiring into the details of their individual peculiarities. In the same way, if a foreigner who had never seen a horse were brought to London, his imagination would be impressed by the vast number and the beauty of these animals, when employed by the wealthy and luxurious,—by their great strength and usefulness when drawing the heavy wagons of commerce,—and perhaps by their wretched appearance, when, as is too often the case, worn out with service they drag on a painful existence in humbler employments, ill fed, beaten, exposed to every change of the seasons, and tasked beyond their strength. But he would learn little of the personal history of these horses,—of their peculiarities of breed, of their modes of nourishment, of their training, of their sagacity, of their generous courage, of their affection to their masters. Much of this sort of individual anecdote we want in the general accounts of the camel; though by comparing various slight and incidental notices of travellers in Asia and Africa, we may be able to collect many curious and valuable particulars of the habits of the animal. The stud at San Rossora, however, attracted the attention of an accurate observer, who was not too much impressed with the generalities of the subject. M. Santi has given us a very minute description of the appearance and habits of these camels, which in some degree supplies the

deficiency of the ordinary narratives of those who have witnessed their immense utility in their native regions.

The camels of Pisa, as we have mentioned, are of the species with one hump. This species is distinguished by naturalists as the *camelus dromedarius*. The term dromedary properly applies to a very swift species of camel. The name of καμηλος δρομας (fleet camel) was given by Strabo and Diodorus Siculus to a single race of the species, of great speed, now called by the Arabs *el heirie*. Obtaining the word dromedary from *dromas*, we have popularly, and even scientifically, applied it to the species. A dromedary is to a camel, what a racer is to a horse of burden. There are one-humped and two-humped dromedaries, and one-humped and two-humped camels.

The lean and almost fleshless body of the camel is covered with hair, which is very short on the forepart of the muzzle : this becomes longer on the top of the head, and almost tufty on the neck and parts of the fore-legs, on the back, and particularly on the hump, which it covers all over. The tail is also thick with hair, which extends considerably beyond the vertebræ. The colour of the hair varies : it is either white, with a slight tint of rose colour, gray, bay, or dark brown, approaching to black. The hair falls off, and is renewed every year about the end of spring and the commencement of summer.

M. Santi has described the peculiar excitation of the camel for about two months of the year—February and March. During this period these patient and gentle creatures, particularly the male, become restless and ferocious ; will bite their keepers ; and fight amongst themselves with their teeth and feet.

The female camel goes with young between eleven and twelve months, at the end of which time she has

one foal. There has been no example at San Rossora of more than one being produced at a birth. The little one is at first unable to stand upon its legs; and, as the mother will not stoop so as to allow it to suck, it would perish with hunger if the keeper did not lift it up to receive the nourishment which nature has provided. This assistance is rendered to the helpless creature for five or six days, during which time it acquires strength to stand upon its legs. We can find no account of the camels of the East which mentions this circumstance: it may perhaps be an evidence of the degeneration of the species in Europe. It is probable, however, that the Arabs, who are distinguished for their extreme care of their camels and horses, may afford the same aid to the young, although the fact has not been noticed. In a wild state, it is evident that the dam must stoop, or the young camel stand up to suck; if otherwise, the race could not be continued.

During the winter, the working camels of Pisa are fed with hay, in large stables; but during the remainder of the year they are turned out to pasture with the rest, who remain without shelter during all seasons. The green and tender grass, which other cattle eat with so much avidity, is neglected by these camels; but they greedily devour the leaves of the oak, of the cork-oak, and of the alder, and feed with manifest delight on every hard and dry substance which they can find, such as the thorn, the thistle, and the broom. They drink only once a day.

Of the mode of breaking and training the camel by the people of the East, we have no complete account. M. Santi supplies this information, with regard to those of Tuscany. At the age of four years, a camel which is intended for labour is broken in. The trainers first double up one of his fore-legs,

which they tie fast with a cord; they then pull the cord, and thus usually compel the animal to fall upon his bent knee. If this does not succeed, they tie up both legs, and he falls upon both knees, and upon the callosity which is upon his breast. They often accompany this operation with a particular cry, and with a slight blow of a whip. At this cry and blow, with the addition of a sudden jerk downwards of his halter, the camel gradually learns to lie down upon his belly, with his legs doubled under him, at the command of his driver. The trainers then accustom him to a pack-saddle, and place on it a load, at first light, but increased by degrees as the animal increases in docility; till at last, when he readily lies down at the voice of his driver, and as readily rises up with his load, his education is so far complete. The burden of a full-grown camel of Pisa is sometimes four hundred kilogrammes (above 800 lbs.,) but such a load, if we may judge by other accounts, is excessive.

He is accustomed, in the same gradual manner, to allow his driver to mount, and to obey all his orders, and even his motions, in the direction of his course. M. Santi says, that it is neither a tedious nor a difficult task thus to subdue an animal of a timid and gentle nature, without defence, and whose spirit has been broken by a long course of slavery. The camels of Pisa, he adds, do not complain with their voices if too heavily laden; but it would appear that the experience and humanity of the Tuscan guides prevent the necessity for this complaint, as they know that the camel would not, or rather could not, rise, if thus over-burdened. In the East, however, the camel is sometimes oppressed by the loads which are placed upon him, when he is kneeling before his driver, and he expresses his displeasure. M. Denon, who travelled in Egypt during the ex-

pedition of Napoleon, and published a splendid work illustrative of the manners and antiquities of the country, has given us a spirited sketch of a camel thus suffering and irritated. "He cries out," says M. Denon, "when he is either laden too heavily or laden unequally. This good animal complains only of injustice, and then it must be extreme for him to complain at all."

Camel's Head, from Denon.

The camel has seven callosities, upon which he throws the weight of his body, both in kneeling down and rising up. These consist of one on the breast, two on each of the fore-legs, and one on each of the hind. He sleeps always with his knees bent under his body, and his breast upon the ground. Some naturalists have contended that these callosities are produced by the constant friction to which the parts are exposed upon which they grow, in the same way that a tight shoe will produce a corn. M. Santi saw these seven callosities upon a camel just born; and he is unwilling to believe that they are an hereditary effect of the labour to which the species has been subjected for many centuries. This is an opinion which these naturalists have adopted, and it has been echoed by historians: Gibbon says the camel bears marks of servitude. For the same

reason, that he is born with it, M. Santi doubts the opinion which has also been expressed, that the hump on the back of the camel is an hereditary effect of constant pressure upon that part. We are only acquainted with the domesticated camel: for although M. Desmoulins, a distinguished French naturalist, asserts that the camel existed in a wild state in Arabia, in the time of Adrian (A. D. 117,) and the natives of central Africa maintain that they are to be found wild in the mountains where Europeans have never penetrated, it is highly probable that these statements refer to individual camels wandering from the control of man. We know nothing distinctly of the camel, but as one of the most useful and important servants of the human race; and, therefore, we have no means of contrasting a wild with a domesticated species. But, in the absence of positive evidence to the contrary, it is more easy to believe that the original organization of the camel should have been adapted to the services to which it is destined, than that the services should have altered the organization. The callosities enable the animal to receive its load, (in the only position in which man could put on that load,) by preventing the fracture of its skin by the pressure, either when it rises up or kneels down; and the hump on the back is so far from being a callosity produced by friction, that it is a soft, fatty substance, which is gradually absorbed into the system when the animal is without food, and is renewed when he obtains pasturage,—an evident proof that it is one of the several admirable provisions which he possesses for his support in the desert. We could as readily believe that the wonderful mechanism of the camel's stomach, by which it is enabled to abstain from water for many days, is a result of its habits, instead of its powers of abstinence

being a consequence of this construction,—as that its hump and its callosities are merely hereditary badges of its subjection to man; and yet this opinion, monstrous as it is, has been adopted by a distinguished naturalist—as we shall have occasion more particularly to notice.

The uses which the camel has served in the civilisation of mankind, in those countries of the East where civilisation first commenced, have been of such importance, that they would fairly enter into the scheme of a wise and beneficent Providence. Unless such an animal had existed in Asia, (a country intersected by immense arid plains, and impassable with burdens, except by a creature possessing at once great strength and an extraordinary capacity of enduring privation,) the intercourse of mankind would have been confined to small spots where abundance reigned; the commodities of one part of that immense region could not have been exchanged for those of another; commerce, the great moving principle in the extension of civilisation, would have been unknown; and knowledge would have been limited to particular districts, and would there have been of the most stunted and feeble growth—in the same way that a native crab-stock produces sour and worthless fruit, till some slip from the tree of another climate is grafted upon it. Thus, instead of the learning of the Hindoos and the Egyptians being communicated from one region to the other,* and thence, spreading over Greece, becoming the imperishable possession of the human race,—and instead of the produce of the East being brought to the West, to induce that taste for comforts and luxuries which principally developes the human intellect,—that portion of mankind which was first civilized would probably at this day have been in the same state of

* See Frederic Schlegel's History of Literature.

ignorance as the Indians of South America, whose communications are cut off by sandy deserts and inaccessible mountains, and who thus believe that the affairs of their mission (a settlement of a few hundred natives under a priest) comprise everything that can be of interest to any individual of the great family of man.*

The camels of Pisa walk at the rate of about three miles an hour, and they travel about thirty miles a day: they are rarely put out of their long stride into a trot, and the pace appears painful to them. It should seem that the establishment of the stud of San Rossora has been advantageous to the district. It would be impossible, say the people who employ them, to have any creatures more docile, more industrious, and more easily satisfied, than these poor camels. They are accustomed to carry round the neighbourhood of San Rossora the wood, hay, and straw which the forests and domain produce; and the carriage of these articles furnishes them a sufficient employment. Some neighbouring proprietors have occasionally bought camels from the establishment, and the price of a young one has been about twenty pounds sterling; but this speculation has seldom answered, partly from the deterioration of the species upon any rich soil and with abundant food, and partly from the injury which they invariably do to trees and shrubs, by gnawing their bark. It appears that a camel of Pisa is sometimes sold to be led about as a show; and it is therefore probable that the camels of our streets may occasionally be brought from San Rossora, instead of being natives of Asia or Africa; and that from this degenerated species we can form no adequate idea of what the Arabians call "the ship of the desert;"—of an animal which, however dull and ugly he may

* See Humboldt, Voyages aux Régions Equinoxiales.

appear, has been described by the Eastern poets as even beautiful in his movements. The bride, in her nuptial attire, is represented "moving gracefully as a young camel,"—an image which may probably have some truth, when applied to the creature in his proper situation, and is, perhaps, an evidence in favour of a once popular theory, which attempted to found the idea of beauty upon that of utility.

The ordinary duration of the life of those camels of Pisa which are employed in labour is about twenty years. The females, and those males that do not work, live to twenty-five, and even to thirty years.

M. Santi mentions a singular circumstance, which, in some degree, confirms an assertion of Pliny, that there is a natural antipathy between the camel and the horse. Many naturalists, he thinks, have expressed their disbelief of this without sufficient examination. It is necessary at Pisa gradually to accustom the horses of the neighbourhood to the sight of the camels, and even to place them together while a horse is training; for without this precaution, there would be constant accidents. If the horse of a

Horse and Camel of San Rossora.

stranger passes through the neighbourhood, immediately that he sees the camel, which he may often do, both in the town and in the country, he sets up his mane, stretches out his ears, trembles, paws the ground, and sometimes, taking the bit between his teeth, runs away in the most bewildered terror.*

We subjoin the concluding observations of the Memoir of M. Santi :—

"The dromedary of Pisa is an inferior and weaker variety than the Arabian dromedary; such, perhaps, as the *lohk* of the Persians ; or, rather, the race has deteriorated in consequence of the difference of climate and of food, and through a life less hard and active than that to which it was accustomed in its native region.

"My observation of our dromedaries, of their habits and their conformation, has convinced me that they were formed by nature with such a peculiar economy, as to require only the most scanty nourishment, and that of the coarsest kind, to support existence. The dromedary has the head singularly small, the neck slender, the body lean, the limbs almost fleshless, the jaws and teeth sufficiently strong to crush thorns and bushes, the branches of trees, and even the husks of dates. He easily fills his small and contracted stomach, and he ruminates his food : he is provided with a bag, or reservoir, in which he may make an ample provision of water to serve him in the time of need, having the power to force the liquid back into his first stomach, and even to his mouth, to allay his thirst, and soften, by rumination, the hard and dry herbs upon which he feeds : the large lump which he has on his back is a mass of fat, destined to supply the want of food by absorption. It is through this peculiar structure that the

*See p. 249.

camel has become the inhabitant of flat countries—sandy, sterile, and arid. Gentle, peaceable, and without defence, he had an asylum against the attacks of beasts of prey, in those deserts where they could not exist; but with man, especially, he found his protection. Without his help, the camel species would, perhaps, have been numbered amongst those quadrupeds which, formerly existing on the earth, are now lost, and are known only by those remains which such naturalists as M. Cuvier have been able to rescue from oblivion."

The Moors brought the camel into Spain; and long after the conquest of Grenada, they were common in the south of that country. The species is now entirely extinct, probably from the same influence of soil and climate that have caused their deterioration at Pisa. San Rossora is therefore at present the only place where the camel is bred in Europe.

Asia is, without doubt, the original country of the camel. The earliest mention of commerce in the Sacred Writings is associated with the caravans. When the brethren of Joseph had cast him into a pit, "they sat down to eat bread; and they lifted up their eyes and looked, and behold a company of Ishmaelites came from Gilead, with their camels bearing spicery, and balm, and myrrh, going to carry it down to Egypt."* It would appear, from this mention of spices, and from the more particular notice of cinnamon in the third chapter of Exodus, that the products of India were exported into Egypt and Palestine; for cinnamon is an exclusive production of India, although the ancients erroneously supposed this spice, as well as all the other spices of commerce, to have grown in Arabia. The Arabians were the great carriers, in the early times, of the valuable pro-

* Genesis, c. xxxvii., v. 25.

duce of the Indian peninsula. Isaiah speaks of the commerce of Sabæa, or Sheba (Arabia Felix,)—"The merchants of Sheba and Ramah, they were thy merchants; they occupied in thy fairs with chief of all spices, and with all precious gold and stones." This commerce was probably for many centuries entirely carried on by land, and chiefly by the agency of the camel; but we learn from the Journal of Nearchus, a navigator of the time of Alexander the Great, whose work has come down to us, and has been admirably translated and commented upon by Dr. Vincent, that the Arabians, three hundred years before Christ, traded to India by sea. In the time of Pliny, this active people had considerable factories on the coasts of Malabar and Ceylon. The Arabians carried their merchandise across the deserts to Egypt; and whilst they thus possessed a monopoly of the Indian trade, as regarded Egypt, the Egyptians held the same monopoly as regarded Europe.

The camel of Asia is frequently mentioned, not only by sacred but profane writers, as connected with the warlike operations of the Eastern people, as well as with their commerce. It was a custom of the Hebrew nations, when they went to battle, to adorn their camels with studs and collars of gold:—"And Gideon arose, and slew Zebah and Zalmunna, and took away the ornaments that were on their camels' necks."* The same practice of adorning camels is said to prevail, at the present day, in many of the countries of Asia.† In Egypt, the camel was known from the earliest antiquity; for in the twelfth chapter of Genesis we find it stated, that Pharaoh bestowed camels upon Abram, when he came with his wife into that country. And yet the camel is never found re-

* Judges, c. viii., v. 21.
† Goguet, Origine des Loix, tom. ii.

presented in the ancient sculptures and paintings of Egypt. In a building at Ghirza, in the state of Tripoli, Major Denham found the remains of a Roman temple, probably executed after the Christian era, of which he has given a drawing ;—and upon the frieze of the entablature we observe a delineation of the camel. Near Mount Sinai, in Syria, there are rude representations upon the rocks which are described by Niebuhr and Burckhardt, of goats, and antelopes, and camels. But with regard to Egypt, Burckhardt says, in a note to the passage where he mentions these figures, which appear to have been cut by the shepherds of the country, "among the innumerable paintings and sculptures in the temples and tombs of Egypt, I never met with a single instance of the representation of a camel. At Thebes, in the highest of the tombs, on the side of the Djebil Habow, called Abd el Gorne, which has not, I believe, been noticed by former travellers, or even by the French in their great work, I found all the domestic animals of the Egyptians represented together in one large painting upon a wall, forming the most elaborate and interesting work of the kind which I saw in Egypt. A shepherd conducts the whole herd into the presence of his master, who inspects them, while a slave is noting them down. Yet even here I looked in vain for the camel." Whether we are to infer from this circumstance that the camel was only partially known in Egypt, and did not cross the Nile till a period more recent than that of the Egyptian temples, we will not undertake to determine. M. Desmoulins, however, has written a very learned, and, in most respects, satisfactory essay, to prove that the camel was not spread over Africa till after the Christian era.* He considers that the question of the existence, or the

* Mémoire lu à l'Institut, 28 Juin, 1823.

absence, of the camel in Africa, at the periods of the great prosperity of that country, inasmuch as it belongs to the history of civil society, and to the theory of the means by which society is established and perfected, demands an especial solution. He shows, on the one hand, that, from the highest antiquity, the camel was employed in the domestic and military service of the Asiatic people ; and that the ancient writers constantly speak, both incidentally and directly, of this animal, when they notice Asia generally, or Arabia particularly. On the contrary, he affirms that all the Greek or Latin writers from the time of Herodotus, in describing the wars with Africa, or the peaceful voyages that were made thither,—whether their descriptions be given as geographers or naturalists,—whether they describe the singularities of the country, or enumerate its animals,—never once mention the camel. M. Desmoulins maintains, that the necessity of the subject would have compelled such notices, if the animal had existed on the African continent. He goes on to show, from various authorities, and inferences which appear sound, that until the third century of the Christian era, there were no camels west of the Nile ; that these animals did not pass the isthmus of Suez until the first excursions of the Arabs, or Saracens, who, about the middle of the fourth century, according to *Ammianus Marcellinus*, wandered with their camels upon the deserts which extend from Assyria to the cataracts of the Nile. The appearance of camels on the west of the Nile took place, he affirms, for the first time, when the Vandals and Moors revolted, after the departure of Belisarius for the reconquest of Italy. It has often been remarked as singular, that Procopius first notices camels in Africa, when he describes the Moors in arms against the lieutenant of Belisarius as mounted on them : this was in the middle of the sixth century. M. Desmoulins concludes, that from

the time of their first introduction by the wandering Saracens, two centuries before, they had multiplied over the great desert of Africa, Sahara, in the same proportion as the Arab tribes had spread thereon; and he shows that there is nothing to be thought extraordinary in this rapidity of their multiplication, when we consider the immense increase of horses and oxen in the Pampas of Buenos Ayres and the Llanos of Apuria, from the period of the discovery of America. M. Desmoulins contends, from these circumstances, that the camel is not a native of Africa; but that the original species came from Arabia, where it existed in a wild state in the time of Artemidorus, as mentioned by Diodorus and Strabo.

At the time when the camel was unknown in Africa, beyond the Nile, the country was overrun with lions. We have already mentioned, in the chapter on the Lion, that many hundreds of lions were annually sent to Rome by the kings and proconsuls of Africa, for the brutal amusements of the Circus. About the middle of the third century, which corresponds with the period of the Arabian emigration into Africa, the number of lions diminished; and their destruction became so rapid, that the chase of the lion was forbidden, except to particular individuals, lest the Circus should want its victims. This game law of the Romans was abrogated under Honorius. The destruction of the lions then became, in great measure, complete; the people could cultivate their land, without being exposed to danger from this fearful beast; and they introduced camels, to facilitate the communication from one place to another, without the apprehension that these, the most valuable of their servants, would be devoured in the plains where they sought their subsistence. The civilisation of mankind is advanced or retarded by apparently trivial causes: the vast number of lions in Africa checked, in all

probability, the progress of civilisation in the interior of that country, at the period when Carthage was powerful, and Egypt enlightened ; and it is not unreasonable to conclude, that the influence of these causes may have been felt through centuries, in perpetuating the ignorance and wretchedness of many of the African tribes. The lion is represented as having an especial partiality for the flesh of the camel. Herodotus states that while Xerxes was on his march for the invasion of Greece, lions came down from the mountains and devoured the camels which carried his luggage, without attacking either horses or men.*

The Arabian tribes, who penetrated into Africa in the third century, were a wandering and pastoral people. They carried with them the habits of their native country : they lived in tents ; they encamped wherever they found pasture for their camels ; the arts of agriculture, which bind mankind to a particular spot, were either unknown to them, or despised ; the milk of their camels served them for food, with the fruit of the palm-tree (the date,) which was spread in abundance over that immense region. This life of adventure was preferred to all others ; and its very privations constituted an excitement peculiarly adapted to their character. The alternations of want and abundance,—the trackless desert, where their camels would wander for whole days without grass or water, succeeded by some green oasis, or fountain surrounded with verdure, where they might repose till they were weary of rest, again to march forward and explore new regions,—these were scenes which offered to them enjoyment, eighteen hundred years ago, and in which the de-

* Lib. 7.

scendants of the same people still find delight. But when a more civilized portion of the same nation,—the merchants who had traded with India, and who were the depositaries of all the refinements and all the learning of the East,—pressed forward, two centuries afterwards, to drive the Romans from their African possessions, and to establish themselves on the shores of Barbary, which were then called "the garden of the world," they brought with them all the physical and intellectual riches of civilisation ; and, subsequently, Arabian science and Arabian literature presented the sole exhibition of the activity of intellect, during the general sleep of the European mind. An old author has well described this extraordinary contrast between the Arabians and other people :—"And in these times was great ignorance of good learning in the Latine church, when good disciples flourished exceedingly among the Mahomedans. Yea, whatsoever the Latines writ, after the industry of the Arabians had acquainted them with their ignorance, is wholly to be ascribed to the Arabians, both their philosophy, physicke, and mathematics; for they had no Greek author, which was not first translated into Arabike, and thence into Latin, as Ptolemy, Euclid, and the rest ; till Constantinople being taken by the Turks, the Greek exiles brought us back to the fountains. John Leo testifies, that many ancient authors and great volumes are amongst them, translated out of the Latine, which the Latines themselves have lost."* The camel was the favoured animal of the Arabians, although the horse was perhaps more prized by individuals ; and whilst the people of the desert never ceased to employ him in their migrations, those of the towns on the coast of the Mediter-

* Purchas, his Pilgrimage, chap. ii., § 4.

ranean carried on an intercourse, through the camel, with the interior of the great African continent—an intercourse which subsists to the present day.

When the Arabs subjected Spain to their dominion, they carried the camel with them, as we have already noticed. The animal remained in the country after their expulsion by the Christians. Had this valuable creature been bestowed upon South America at the time of the conquest, it would have done much for the civilisation of the native tribes, and for the general prosperity of that immense region; and have compensated in some degree for the evils which the Spaniards inflicted on the inhabitants of the New World. Some of the burning plains which separate one district of South America from the other, are, like the deserts of Africa, impossible to be crossed with merchandise in any way but by means of the enduring camel. Wherever there are immense arid districts to be traversed between one people and another, and wherever the surface of the country presents insurmountable obstacles to the construction of canals (such as the isthmus of Panamà, the plain of Mexico, and the deserts which separate the kingdom of Quito from Peru, and Peru from Chili,) the camel would offer the most important aid to internal communication and to profitable commerce, and thence to that interchange of knowledge which follows in its train.* An attempt was made, sometime after the conquest, to bestow this blessing upon Spanish America; but the cruel prejudices and avarice of the rulers of that unhappy country prevented the realization of the intended good. A Biscayan, Juan de Reinega, at his own cost, carried some camels from Spain to Peru. At the end of the sixteenth century, Father Acosta,

*See Humboldt, Essai Politique sur la Nouvelle Espagne, tom. i. p. 23; tom. ii. p. 689.

who wrote a natural history of the Indies, saw some of these animals at the foot of the Ande · but they were taken little care of, and the race soon became extinct. They were neglected, because the labour which the Spaniards required could then be performed, in the accustomed manner, and with less exertion to themselves. The Indians were the beasts of burden ; and they were driven by hundreds at the bidding of their Spanish lords (*encomenderos*,) either to carry merchandise across the Cordilleras, or to follow the armies in their expeditions of discovery and pillage.* Under this oppression, the Indians gradually perished ; but a long subjection had broken their spirit, feeble at the best. The introduction of camels by Juan de Reinega was resisted as an innovation by the *encomenderos*, and the court of Spain thought the complaint a just one. In this way the native population was gradually extirpated, and South America, fertile in all the riches of a bounteous nature, remained a country of tyranny and suffering —of partial luxury and general want—a land of mines and of deserts, for three centuries. A better state of things has arrived, and the people have begun to understand the value of the camel. Several of these useful animals have been imported into the country ; and Humboldt saw them on a burning soil, feeding under the palm tree, near New Valencia. These camels were brought from the Canary Islands. There are many thousands in the islands of Lancerote and Fortaventure, where they have a climate and vegetation analogous to those of the African continent. They were brought to these islands in the fifteenth century. At Teneriffe, their number is small. Humboldt describes some

* See Humboldt, Voyages aux Régions Equinoxiales, book v. chap. xvi.

white camels near Ste. Croix, bearing very moderate burdens. They are principally employed to carry merchandise from the custom-house to the warehouses.*

We have thus taken a rapid view of the ancient history of the camel, and the present distribution of this most valuable animal over the globe. We have endeavoured to show that this creature, having a very peculiar organization, adapted to the services which it performs, has been, from the earliest antiquity, one of the most important agents in the communications between one people and another, in particular regions, where, without his aid, civilisation would never have spread. We perceive, upon the authority of a most sagacious and philosophical inquirer (Humboldt,) that the importance of the camel to mankind does not stop at his native country, nor in Africa, but that the help of this servant of man is still extensively required in the vast regions of South America. In the next chapters we shall describe the camels of the caravan, and of the wandering Arabs, as they exist at present, condensing the accounts of many authentic volumes of travels; and, whilst we thus hope to gratify a reasonable curiosity, we shall at least accomplish some good if we show that the poor, limping, apparently stupid, and, to some eyes, ugly creature, which is led about our streets, has been, and still is, one of the greatest blessings which has been bestowed upon the human race by that Providence which adapts every animate and inanimate being to its particular ends in the economy of the world. When the Arab halts on his weary march, and, taking the heavy saddle from his patient beast, sits down for an hour of rest and refreshment,

* Voyages aux Régions Equinoxiales, book i. chap. ii.

he doubtless often thinks of the benefits which he receives from the faithful slave which stands by his side, and he is grateful and kind to him. Such a group Denon has delineated.

Halt of Camels

Chapter IX.

THE CAMEL—(*continued.*)

In the countries of the East, amongst the many remarkable contrasts which the natural productions and the customs of the people present to those of Europe, there is nothing more striking than the universal employment of the camel. It is not necessary to penetrate into the interior of Asia to witness this great change in the mode by which commercial operations are conducted. For instance, the merchant who visits the seaport of Smyrna, the great point of traffic between the Franks and the Turks, sees this new animal power everywhere around him, performing those services which he has been accustomed to observe executed by the horse and the mule; and even superseding, and rendering unnecessary, that great medium of more advanced communication—canal carriage. Burckhardt, the celebrated traveller, says, "In countries where camels are bred in great numbers, land-carriage is almost as cheap as that by water. The carriage for a camel-load of goods, weighing from six to seven hundred pounds English, from Bagdad to Aleppo, a distance of six hundred miles, is four pounds."* All labour, of course, is cheaper in countries where the people are contented with scanty fare, and know nothing of those luxuries which almost the meanest among us enjoy; but the great abundance of camels, and the easy rate at which they are maintained, render this animal power the readiest instrument of commercial

* Travels in Nubia. 4to. p. 120.

intercourse. The use of it is therefore universal throughout Asia Minor, a country where considerable trading adventures are carried on, and from which Europeans, and particularly the English, derive large supplies of the valuable productions of a fertile soil and a delicious climate.

Through the kindness of a gentleman who resided several years at Smyrna, and who has just published a very interesting narrative of what he saw in Asia Minor,* we have received some lively descriptions of the impressions which he derived from his observations of this useful animal. He was lodged with a merchant of Smyrna, who largely exported the fruits of the interior. To the house of the merchant was attached a large court-yard, and here a portion of the caravan, principally laden with figs, arrived at stated seasons. The number of camels which came from time to time was considerable, but they entered and departed with a peculiar silence. The camel's tread is perfectly noiseless. The foot, composed of an elastic substance, and covered with hair, falls on the pavement in a manner very different from the rattling of the iron-shod horse. The large creature moves along, under a heavy load, with no greater noise than is made by the deer that bounds over the mossy turf. Mr. MacFarlane thus describes this peculiarity :—"What always struck me as something extremely romantic and mysterious was the *noiseless* step of the camel, from the spongy nature of his foot. Whatever be the nature of the ground—sand, or rock, or turf, or paved stones, you hear no footfall ; you see an immense animal approaching you *stilly* as a cloud floating on air, and unless he wear a bell, your sense of hearing, acute as it may be, will give you no intimation of his presence." In a

* Constantinople in 1828, by Charles Mac Farlane, Esq. 4to. 1829.

book which we shall have occasion to notice more particularly ("Riley's Shipwreck and Captivity in the Great Desert,") the silent passage of a train of camels up a rocky steep near Santa Cruz, "because their feet are as soft as sponge or leather," is well contrasted with "the clanking sound of iron against the stones, which announced the approach of horses or mules that were shod."* But the noiseless movement of a caravan of camels is also produced by their perfect discipline. Mr. Mac Farlane was delighted to see the precision with which these docile creatures executed their duties, without scarcely a command from their drivers. Marching into the yard in single file, they formed a crescent; and the first camel having knelt down to be relieved of his load, the rest patiently waited till it should come to the turn of each to be disburdened in a similar manner. The merchant with whom our friend resided used to feel great delight in recognising the countenances of the camels; and he would readily point out the individuals that he had noticed in previous caravans. This was a task of some difficulty; for the appearances of camels vary much less than those of horses both in colour and form. Their *devidgis*, or drivers, know them thoroughly, and have favourites that are more particularly the objects of their attention. One person has seldom the charge of more than a dozen; and each camel has a particular name, to which he readily pays attention. There is nothing remarkable in this; for even if one camel were perfectly like another in form and colour, with a creature so tractable there would naturally be some expression of countenance which the driver would easily distinguish. Mr. Mac Farlane says that he never could see any particular beauty in a camel,

*p. 303. 4to.

as distinguishing him much from his fellows, except now and then a clearer or a brighter hue, a smaller head, or more lively eye, but that the devidgis talk of their proportions as we do of those of horses. But although there may appear to a stranger a perfect similarity between individual camels, they vary just as much in some minute circumstances as all other animals. The Arabs of the desert readily track their wandering camels over plains covered with the feet-marks of other camels and men,* and the Bedouins have the same extraordinary accuracy of observation. "These Bedouins, being under no fear of robbers, leave their goods, and allow their beasts to pasture without any one to watch them. When they want the camels, they send to the springs in search of them ; and if not found there, they trace their footsteps through the valleys, for every Bedouin knows the print of the foot of his own camel."†

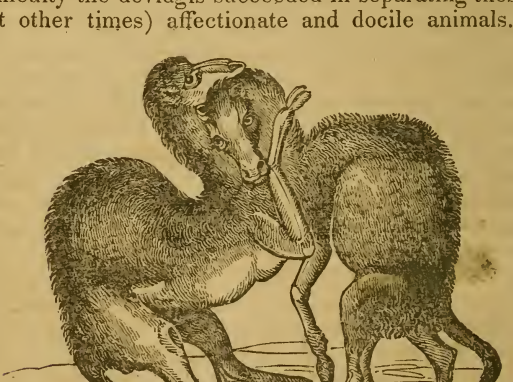
The Turks, who are idle and luxurious, and affect a contempt for the quiet virtues, call the Armenians, whom they despise as a patient and drudging race, camels. This is a compliment both to the poor animals and to the Armenians ; for the camels are the most amiable of creatures. Their good nature to other beasts, we are told, is remarkable. They will let the goats of the towns and villages share their meals, and almost take the provender from their mouths ; the ass of the driver takes equal liberties, and dogs lie down to sleep with them without interruption. But the Turks take a sorry advantage of those periodical fits of rage, which constitute the exception to the general character of this useful creature. At particular seasons of the year, camel-fights are common at Smyrna and at Aleppo.

* Lyon's Northern Africa, p. 237.

† Burckhardt's Syria, p. 536.

Such exhibitions are the disgrace of the vulgar (be they the high or the low vulgar) of all countries; and the lion-fights of the savage Romans, the bull-fights of Spain, the bull and badger-baitings and cock-fights of England, and the camel-fights of Asia Minor, are equally indications of a barbarian spirit, which can only be eradicated by knowledge and true religion. Of these, however, the camel-fights appear the least objectionable. The camels of Smyrna are led out to a large plain, filled with eager crowds. They are muzzled, to prevent their being seriously injured, for their bite is tremendous—always bringing the piece out. A couple being let loose, they run at each other with extreme fury. Mr. Mac Farlane thus describes to us this curious scene :—"One of the favourite holyday amusements of the Turks of Asia Minor is furnished by the camel-combats. An enclosure is made, and two camels, previously muzzled so that they cannot hurt each other much, are driven in, and incited to fight with each other. Their mode of combat is curious : they knock their heads together (laterally,) twist their long necks, wrestle with their fore-legs, almost like bipeds, and seem to direct their principal attention to the throwing down of the adversary. During this combat, the Turks, deeply interested, will back, some one camel and some the other ; and they will clap their hands and cry out the names of their respective favourites, just as our amateurs do with their dogs, or as the Spaniards, at their more splendid and more bloody bull-fights, will echo the name of the hardy bull or the gallant *matador*. The Pasha of Smyrna used frequently to regale the people with these spectacles in an enclosed square before his palace ; and I saw them besides, once, at a Turkish wedding at the village of Bournabah, near Smyrna, and another time on some other festive occasion, at Magnesia.

I once, however, chanced to see a less innocent contest, which I have noticed in my volume of travels. This was on the plain between Mounts Sipylus and Tartalee and the town of Smyrna. It was a fight in downright earnest. Two huge rivals broke away from the string, and set to in spite of their drivers. They bit each other furiously, and it was with great difficulty the devidgis succeeded in separating these (at other times) affectionate and docile animals."



Camels fighting.

The popular amusements which the camel affords in other parts of the East are of a less ferocious nature. At a particular season of the year, the Mahomedans in the neighbourhood of Mount Sinai have *camel-races*, and this festival is a time of great rejoicing.*

We have noticed, in the preceding chapter, the terror which the horses of Pisa, that have been unaccustomed to the camel, feel at the unusual sight

* Burckhardt's Syria, p. 490.

of this animal in the quiet performance of his laborious duties. This is not so at Smyrna, and other parts of Asia. The horse and the camel are there constantly seen, each occupied in its respective labours; and horses in many cases form part of caravans—the horse carrying the traveller and the camel his luggage. We apprehend that this indifference in the horses of the East to the presence of the camel is an effect of hereditary habit. They have been domesticated together for many centuries, while at Pisa the introduction of the camel is comparatively of modern date. We are strengthened in this opinion by a curious passage in Herodotus, the Greek historian. He relates that when, under the walls of Sardis, Cyrus met the Lydian army, commanded by Crœsus, in order of battle, fearing the cavalry of his enemy, he assembled all the camels which carried the baggage and provisions; and having taken off their loads, he put soldiers upon them, with orders thus to march against the cavalry of Crœsus. Cyrus also ordered his infantry to follow the camels, and his cavalry to march in the rear of the infantry. He did this, says the historian, because the horse fears the camel, and cannot bear the sight or the smell of him. Crœsus depended for success upon his cavalry, but the stratagem of Cyrus succeeded; for when the horses had smelt and seen the camels, they became unruly and ran back.* It may be inferred from this remarkable circumstance that the horse and the camel had not become familiar in the time of Cyrus; and as we have sufficient testimony to the fact of a like terror of the horse in our own times, we may consider this peculiarity as one of the many curious examples of the influence of domestication, in changing or modifying the natural instincts of every animal.

* Clio, I.

The training of the camels to bear burdens, in the countries of the East, has not been *minutely* described by any traveller. We have seen how this education is carried on at Pisa. M. Brue, who, at the latter part of the seventeenth century, had the management of the affairs of a French commercial company at Senegal, says, "soon after a camel is born, the Moors tie his feet under his belly, and having thrown a large cloth over his back, put heavy stones at each corner of the cloth, which rests on the ground. They in this manner accustom him to receive the heaviest loads."* Both ancient and modern authors agree tolerably well in their accounts of the load which a camel can carry. Sandys, in his Travels in the Holy Land, says, "six hundred weight is his ordinary load, yet will he carry a thousand." The caravans are distinguished as *light* or *heavy*, according to the load which the camels bear. The average load of the heavy, or slow-going camel, as stated by Major Rennell, who investigated their rate of travelling with great accuracy, is from 500 to 600 lbs.† Burckhardt says, that his luggage and provisions weighing only 2 cwt., and his camel being capable of carrying 6 cwt., he sold him, contracting for the transport of his luggage across the desert.‡ Mr. Buckingham saw camels carrying mill-stones to the large towns on the west of the Jordan, each of which was nearly six feet in diameter; and one being laid flat on the animal's back, in the very centre of the hump, and resting on the high part of the saddle, was secured by cords passing under his belly.§ The camel sometimes carries large panniers, filled with heavy goods; sometimes bales are strapped on his back, fastened either with cordage made of the palm-

* Prevost, Histoire Générale des Voyages, tom. ii.
† Philosophical Transactions, 1791. ‡ Nubia, p. 166.
§ Arab tribes, p. 166.

tree, or leathern thongs; and sometimes two, or more, will bear a sort of litter, in which women and children ride with considerable ease. The animal is so docile and steady—so regular in his movements and precise in his steps—and withal so capable of sustaining a very large and unwieldy burden—that his driver seldom hesitates about the bulk, or the awkwardness in any other way, of what he places on his back. Captain Lyon, amongst the Arabs of Northern Africa, observed many of the children carried in leather bags, which were ordinarily used to keep corn in; and in one instance he saw a nest of children on one side of a camel, and its young one in a bag, hanging on the other. Major Denham, on his journey from Mourzuk to Kouka (in Northern Africa) saw a little camel suddenly brought into the world, which was instantly thrown across another camel, while the mother quietly followed after her offspring. In the Great Desert, Riley, who was a captive to the Arabs, used to assist the women and children to place themselves in baskets, which were made of camel's skin, and fixed in such a manner with a wooden rim around them, over which the skin was sewed, that three or four could sit in them with perfect safety and ease, only taking care to preserve their balance. But the patience of the camel, in bearing every sort of load, and his uncomplaining nature, when overburdened, sometimes lead to oppression. He is occasionally too heavily weighted; and though there prevails an opinion that he will not rise with too great a load, he often sinks under his burden, and expires.

Mr. Parsons, who was consul at Scanderoon, and travelled over the Little Desert from Aleppo to Bagdad, repeatedly saw camels drop through overloading. Relief is generally attempted when it is too late. He says, in his journal, "the loading was taken off from

the four that fell down ; and, although they made many efforts, as they had not strength to rise again, they were left. It is surprising to observe how docile these poor animals are, and how freely they travel whilst they have strength to do so, without beating, for that would not answer any purpose ; they will continue their pace until they either drop dead on the spot, or are so much exhausted, that it is very rare that any one recovers again after falling."* Burckhardt, on his journey of twenty-two days from Daraou to Berber, mentions another instance of cruelty in the camel-drivers : " the greater part of the camels had their backs horribly wounded, in consequence of the pressure of the loads, and of the avarice and negligence of the owners, who, in order to save a few piastres for a good and well-stuffed saddle, exposed the poor beasts to the greatest sufferings." This is brutal ; but it is the brutality of an untaught and half-civilized being. There are, in our own country, many examples of as great cruelty ;—and we cannot look with contempt upon the camel-driver of Asia, without feeling that the English horse is sometimes equally maltreated, and that his tyrants ought also to be the subjects of unmixed reprobation. Like the horses of our own country, too, the camel occasionally suffers from the ignorance of those who pretend to administer relief to his ailments. Bishop Heber, in his journey to Cawnpoor, in the East Indies, says, " in the course of this evening my attention was attracted by the dreadful groans of one of our baggage-camels, at some little distance among the trees. I went to the spot, and found that two of the ' sarbauns,' or camel-drivers, had bound its legs in a kneeling posture, so that it could not rise or stir, and were now busy in burning it with hot

* Travels in Asia and Africa, 1808, p. 108.

irons, in all the fleshy, muscular, and cartilaginous parts of its body. They had burned six deep notches in the back of its neck, had seared both its cheeks immediately under the eye, its haunches and head, and were now applying the torturing instrument to its forehead and nostrils. I asked what they were doing ? and they answered that it had a fever and wind, and would die if they did not treat it in this manner." The animal did die in a few hours. This was not intended as cruelty, for the Indians, doubtless, firmly believed in the efficacy of their torture. Amongst many rude nations, particularly those of Africa, the excitement produced by burning muscular and fleshy parts of the body, is the general remedy for every disease of the human frame ;—and, as the people sometimes get well, in spite of the remedy, the credit of the art is never impeached by the sufferings of its victims. Quackery is everywhere the same, endeavouring to make particular remedies of universal application ; and therefore necessarily committing an infinity of mistakes of the most serious consequence.

Avarice and ill temper will occasionally make the Arabs and Turks maltreat their camels ; though it is due to them to state that these instances are rare. The animal is usually treated with the care and kindness which his usefulness and his goodness demand. Mr. Mac Farlane says, " I have been told that the Arabs will kiss their camels in gratitude and affection, after a journey across the deserts. I never saw the Turks, either of Asia Minor or Roumelia, carry their kindness so far as this ; but I have frequently seen them pat their camels when the day's work was done, and talk to them on their journey, as if to cheer them. The camels appeared to me quite as sensible to favor and gentle treatment, as a good bred horse is. I have seen them curve and twist their long lithe necks as

their driver approached, and often put down their tranquil heads towards his shoulder."

Again, he says, "Near Smyrna, and at Magnesia and Sardes, I have occasionally seen a camel (a special favourite) follow his master like a pet dog, and go down on his knees before him, as if inviting him to mount. I never saw a Turk ill use the useful, gentle, amiable quadruped. But I have frequently seen him give it a portion of his own dinner, when, in unfavourable places, it had nothing but chopped straw to eat. I have sometimes seen the devidjis on a hot day, or in passing a dry district, spirt a little water in the camels' nostrils; they pretend it refreshes them."

As we have mentioned, in the previous chapter, the Asiatics and Africans distinguish as dromedaries those camels which are used for riding. There is no essential difference in the species, but only in the breed. The camel of the heavy caravan, the baggage camel, may be compared to the drayhorse; the dromedary to the hunter, and, in some instances, to the racehorse. It is to be regretted that naturalists have called the camel, with one hump, the dromedary; for this appellation produces a confusion in reading those travels which, very properly, use the name dromedary, as applied by the natives to a swift or riding camel. Burckhardt, before his expedition into Nubia, bought two dromedaries, one of which he rode ten hours a day for thirty-five days. The speed of some of these animals is very great, compared with the slow march of the caravan. Messengers on dromedaries, according to Burckhardt, have gone from Daraou to Berber in eight days, while he was twenty-two days with the caravan on the same journey. Dromedaries of the Bisharye race, which are exported from the Nile countries to Djidda, are the finest in existence.* Purchas, who, two centuries

* Burckhardt.

ago, collected the most interesting accounts of European travellers, in a voluminous work which he called his 'Pilgrimage,' thus describes the camels of Africa. "Of camels they have three sorts: the first called Huguin, of huge stature and strength, able to carry a thousand pound weight; the second less, with two bunches on the back, fit for carriage and to ride on, called Becheti, of which they have only in Asia. The third sort, called Ragualiel, is meagre and small, able to travel (for they are not used to burdens) above an hundred miles in a day. And the king of Tombutoo can send messengers on such camels to Segelmesse or Darha, nine hundred miles distant, in seven or eight days, without stay or change by the way."* This is a statement which we might conceive to be exaggerated, if we were to assume the speed and endurance of the horse as points of comparison. But the creatures are essentially different; and the relation of the old geographer is borne out by unimpeachable testimony. The Ragualiel of Purchas is the Heirie, or Maherry, of the Desert. Its swiftness is thus described in the figurative language of the Arabs: "When thou shalt meet a heirie, and say to the rider, Salem Alick, ere he shall have answered the Alick Salem, he will be afar off, and nearly out of sight, for his swiftness is like the wind." Mr. Jackson, in his account of the Empire of Marocco, states that the fastest breed of the swift dromedary, which is called a 'Sebayee,' will perform a journey of thirty-five days caravan travelling, in five days. The mean daily rate of the heavy caravan, according to Rennell, is about eighteen miles; and thus it appears, from Mr. Jackson's statement, that the heirie will perform six hundred and thirty miles in five days—an almost incredible effort of speed and perseverance. Captain Lyon says that the maherry, of the Northern

* Purchas his Pilgrimage, vol. i., book 6, chap. 1.

African Arabs, will continue at a long trot of nine miles an hour, for many hours together. Riley often travelled at the rate of seven or eight miles an hour, for nine and ten hours a day. He and his companions were mounted upon the dromedaries, without a saddle, and they were half naked. Their sufferings were great; for the creatures, he says, "took very long steps, and their motions being heavy, our legs, unsupported by stirrups or anything else, would fly backwards and forwards, chafing across their hard ribs at every step." These dromedaries travelled in companies, and, therefore, their speed was naturally not so great as that of a single one with a courier. Mr. Jackson tells a romantic story of a swift dromedary, whose natural pace was accelerated in an extraordinary manner by the enthusiasm of his rider: "Talking with an Arab of Suse, on the subject of these fleet camels, and the desert horse, he assured me that he knew a young man who was passionately fond of a lovely girl, whom nothing would satisfy but some oranges; these were not to be procured at Mogadore, and, as the lady wanted the best fruit, nothing less than Marocco oranges would satisfy her. The Arab mounted his heirie at dawn of day, went to Marocco (about one hundred miles from Mogadore,) purchased the oranges, and returned that night after the gates were shut, but sent the oranges to the lady by a guard of one of the batteries." His excited feelings carried forward the Arab lover; and the length of an African day favoured his enterprise. He did not suffer like poor Riley, who, when his naked legs were chafing the camel's ribs for many hours, says, with real pathos, "it seemed to me as though the sun would never go down." The ugly and swift camel, Alboufaki, is a conspicuous figure in the singular romance of Vathek. The wandering Arab, and his maherry, have an extraordinary appearance, which Captain Lyon has described: "The

The swift Dromedary.

saddle is placed on the withers, and confined by a band under the belly. It is very small, and difficult to sit, which is done by balancing with the feet against the neck of the animal, and holding a tight rein to steady the hand."

The first experiment which an European makes in bestriding a dromedary is generally a service of some little danger, from the peculiarity of the animal's movement in rising. Denon has described this with his usual vivacity. During the French invasion of Egypt, a part of Dessaix's division, to which the scientific traveller was attached, was sent with camels to a distant post across the desert. "The *boute-selle* (the mounting at a signal) was very amusing. The camel, slow as he generally is in his actions, lifts up his hind-legs very briskly at the instant his rider is in the saddle; the man is thus thrown forward : a similar

movement of the fore-legs throws him backward. Each motion is repeated ; and it is not till the fourth movement, when the camel is fairly on his feet, that the rider can recover his balance. None of us could resist the first impulse ; and thus nobody could laugh at his companions."* Mr. Mac Farlane tells us, in his letter, that upon his first camel adventure, he was so unprepared for the probable effect of the creature's rising behind, that he was thrown over his head, to the infinite amusement of the Turks, who were laughing at his inexperience. His description of this experiment is as lively as that of Denon :—" I was acquainted with this peculiarity of animal movement in a striking manner, the first time I mounted a camel out of curiosity. I ought to have known better—and, indeed, did know better ; but when he was about to rise, from old habits associated with the horse, I expected he would throw out his fore-legs, and I threw myself forward accordingly—when up sprung his hind-legs, and clean I went over his ears, to the great amusement of the devidjis."

Riley tells a somewhat similar story of the effect of the rough movement of a large camel :—" They placed me on the largest camel I had yet seen, which was nine or ten feet in height. The camels were now all kneeling or lying down, and mine among the rest. I thought I had taken a good hold, to steady myself while he was rising ; yet his motion was so heavy, and my strength so far exhausted, that I could not possibly hold on, and tumbled off over his tail, turning entirely over. I came down upon my feet, which prevented my receiving any material injury, though the shock to my frame was very severe. The owner of the camel helped me up, and asked me if I was injured : I told him, no. ' God be praised ! ' said he, ' for turning you over : had you fallen upon your head, these stones must have dashed out your brains.

* Denon, Voyage, tom. ii. p. 221. Paris, 1802.

But the camel,' added he, 'is a sacred animal, and Heaven protects those who ride on him! Had you fallen from an ass, though he is only two cubits and a half high, it would have killed you; for the ass is not so noble a creature as the camel and the horse.' I afterwards found this to be the prevailing opinion among all classes of the Moors and the Arabs. When they put me on again, two of the men steadied me by the legs, until the camel was fairly up, and then told me to be careful, and to hold on fast: they also took great care to assist my companions in the same way."*

Every preparation for a long journey being completed,—the dromedaries and horses having their riders on their backs, and the camels having received their bales of goods and their water-skins,—the caravan sets forward on its march. In Asia, an ass, bearing a tinkling bell, usually walks at the head, and the camels follow, one by one. Mr. Mac Farlane thus describes this arrangement, as well as their measured pace:—"The caravans, or strings of camels, are always headed by a little ass, on which the driver sometimes rides. The ass has a tinkling bell round his neck; and each camel is *commonly* furnished with a large rude bell, that produces, however, a soft and pastoral sound, suspended, not to the neck, but to the front of the pack, or saddle. As I have observed of the mules in Spain and Italy, they will all come to a dead stop, if these bells be removed by accident or design; and like the mules also, they always go best in a long single line, one after the other. We tried the experiment of the bell at Pergamos. Two stately camels, the foremost furnished with the bell, were trudging along the road with *measured* steps: we detached the bell with a long stick; they halted as the sounds ceased, nor could we urge them forward until their ears were cheered

* Riley's Shipwreck and Captivity, p. 289, 4to.

with the wonted music. I have used the word *measured*, not as matter of poetry, but of fact. Their step is so *measured* and like clock-work, that on a plain you know almost to a yard the distance they will go in a given time. In the flat valleys of the Hermus and Caicus, I have made calculations with a watch in my hand; and have found, hour after hour, an unvarying result, the end of their journey being just at the same pace as the beginning : their pace is three miles an hour." He adds : "I may remark as curious, that the devidjis always preserve the same order of distribution, or, as we might say in military language, 'dress the line,' in the same manner. Thus one camel always goes first, another second, another third, and so on ; and if this order is interfered with, the beasts will become disorderly, and will not march. Each gets attached to a particular camel of the caravan ; prefers seeing his tail before him to that of any other ; and will not go if you displace his friend." "We met caravans of camels," says Dr. Clarke, speaking of Cyprus, "marching according to the order always observed in the East ; that is to say, in a line, one after the other ; the whole caravan being preceded by an ass, with a bell about his neck."* Burckhardt gives the reason for the camels thus travelling in a single file :—"The Souakin caravans, like those of the Hedjaz, are accustomed to travel in one long file : the Egyptians, on the contrary, march with a wide extended front ; but the former method is preferable, because if any of the loads get out of order, they can be adjusted by leading the camel out of the line, before those behind have come up; in the latter case, the whole caravan must stop when any accident happens to a single camel. The caravans from Bagdad to Aleppo and Damascus, consisting sometimes of two thousand camels, marching abreast of each other, extend over a space of more than a

* Travels, vol. iv. p. 74. 8vo.

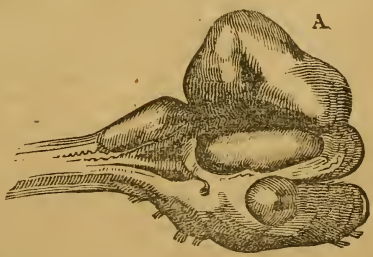
mile." The individual camels, which march in line, invariably follow the steps of the one which precedes them; and thus they are often led wrong, if the drivers are negligent. They are sometimes tied, the one to the tail of the other, like strings of horses in England. Burckhardt, in his journey from Mecca to Medina,* says, "the Arab riding foremost was to lead the troop; but he frequently fell asleep, as well as his companions behind, and his camel then took its own course, and often led the whole caravan astray." In the deserts, it requires especial vigilance, and extraordinary local knowledge in the drivers, to keep the right direction. The compass is sometimes used; but, generally, the camel-drivers ascertain their course by some marks known only to themselves,—some sand-bank, or prickly shrubs, which only their experienced eye can distinguish from similar objects. "Every spot in the plains of Arabia is known by a particular name; and it requires the eyes and experience of a Bedouin to distinguish one small district from another. For this purpose, the different species of shrubs and pasturage produced in them by the rains are of great assistance; and whenever they wish to mention a certain spot to their companions, which happens to have no name, they always designate it by the herbs that grow there."† The camels of the caravan are wholly dependent upon those which precede them for the regularity of their pace, or for their haltings; and they therefore are completely under the direction of the leader, whether the man or the beast assume that office. Even a rider can never stop his dromedary, while its companions are moving on; and thus it is a point of excellence in a traveller, with which the Arabs are highly pleased, to jump off and remount without stopping his beast.‡ The leading camel,

* Travels in Arabia, 1829. † Burckhardt's Arabia.
‡ Burckhardt's Syria.

however, requires to be excited by its rider; and if it is not urged on by hearing the human voice, it gradually slackens its pace, and at last stands still to rest. If the leading camel once stops, all the rest do the same. Burckhardt, in his journey through Arabia, often walked ahead of the caravan: he sometimes had to wait a long time for its coming up, and having retraced his steps, would find the camels standing still, and every soul upon them fast asleep. It is indifferent to these poor creatures where they stop; for they are regardless of shade, and will remain quietly exposed to the hottest beams of the sun.* As long as the voice of the driver is heard, the camel does not heed what situation he is in. Captain Lyon saw a blind camel-driver, who held by the animal's tail, and was in the habit, with this assistance, of going constantly over an uneven and dangerously steep track. Whatever be the nature of the road they toil over, they plod steadily on. Burckhardt says, "it is an erroneous opinion that the camel delights in sandy ground; it is true that he crosses with less difficulty than any other animal; but, wherever the sands are deep, the weight of himself and his load makes his feet sink into the sand at every step, and he groans and often sinks under his burden. It is the hard, gravelly ground of the desert which is most agreeable to this animal." Major Denham says, that in the stony desert "the sharp points bruise their feet, and they totter and fall under their heavy loads." This is an apparent and not a real contradiction, between these two excellent authorities. The foot of the camel is adapted to tread upon a smooth surface, whether that surface be hard or soft. This foot is divided into two toes, without being separated. It is partly like the hoof of a horse, and partly cloven; for a horny sole spreads from the heel forward,

* Clarke, iv. 74.

under the foot, uniting the middle part, and leaving the toes free. This horny sole is part of an elastic substance, which, being bedded in two cavities of the foot, yields to the pressure of the soil; whilst the toes spread upon touching the ground, in the same way that the rein-deer's foot extends, to present a large surface to the snow.* We thus see that the camel, having a very large, spreading, and elastic foot, moves with ease over any smooth surface, and does not sink into the sands, with his heavy lading and his own large body, in the same way that he would if his foot were small and hoofed, as that of the horse. From the opinion of our obliging correspondent, Mr. Mac Farlane, we should be led to conclude that loose stones are not such an annoyance to the camel as might at first be supposed. He says, "The foot, certainly formed by nature to tread a loose sandy soil, does not, however, appear to me to suffer from stony or hard roads. In Asia Minor there are mountains in every direction; the paths across them are hard, rough, and loose, as rocks and broken stones can make them; yet I have often seen camels treading them without any appearance of suffering,



Inside of a Camel's Foot.—A. is the cushion upon which the animal treads, shown as lifted out of its bed.

and though I have met them in my travels, hundreds

* See Preliminary Discourse

in a day, I do not remember having ever seen a wounded hoof." The surface which the camel chiefly dislikes is mud ; for in that he slips about : and thus he is, with the greatest difficulty, prevailed upon to cross a loose, muddy tract, however narrow, though he will wade through a river without much entreaty. Mr. Mac Farlane assures us, that he has seen the devidjis spread the coverings of their tents and even their own garments over the obnoxious ground, that the camels might walk without fear.

The camel will ascend and descend hills, if they are not too steep. In the Desert they sometimes meet with sand-banks, from twenty to sixty feet high, and almost perpendicular, which must be crossed. The camel, in such situations, constantly blunders and falls with his heavy load ; and in descending, the Arabs hang with all their weight on the animal's tail, to steady him.* Thus his docility compensates, in some degree, for the difficulty which he occasionally finds in travelling ; and it must be remembered, that sharp rocks, and steep hills, are the exceptions to the general character of the countries over which he travels, and for which his conformation is so admirably adapted. Rivers also rarely occur ; and yet the camel will readily cross them. Norden, a celebrated Danish traveller in Egypt and Nubia, was struck with the mode in which loaded camels crossed the Nile. "A man swam before, holding in his mouth the bridle of the first camel ; the second camel was fastened to the tail of the first, and the third to the tail of the second. Another man, sitting on a truss of straw, brought up the rear, and took care that the second and third camels should follow in a row." Captain Lyon heard from natives of Africa, that camels are conducted across the Niger by men who hold them by their long upper lips, and keep their heads above water : the forepart of that animal

* Denham, p. 28.

being the heaviest, another man sits behind the hump, in order to raise the fore and depress the hinder parts, whilst crossing. Major Denham describes a passage of the Shary, an African river, which was effected with considerable risk: "the stream was extremely rapid, and our horses and camels were carried away from the sides of the canoe to which they were lashed: we lost a camel by this passage; these animals have a great dislike to water, and, after swimming a stream, are often seized with illness, and are carried off in a few hours." Burckhardt, describing the passage of a river in Nubia, says, "an inflated goatskin was tied to the neck of each camel, to aid it in swimming; but we had great difficulty to get them into the water, the Egyptian camels not being accustomed to this mode of passing the river. My guide stripped, and laid hold of the tail of his camel with one hand, while he urged the beast forward with a stick which he carried in the other." Thus we see that, under different circumstances, and in various countries, different methods are employed to convey the camel across streams upon which there are no rafts or boats;—and that though the patient animal has an objection to the water, his docility triumphs over his instinct, and he yields to the will of his driver, sometimes even at the peril of his life.

The halts of the caravan for the night are exceedingly curious and picturesque. We shall avail ourselves of Mr. Mac Farlane's communications, before we proceed to those of other observers:—

"On their journeys, the devidjis always choose, for halting places, spots that abound in bushes or brakes, where such are to be found; the camels are left at liberty to browse, and their drivers smoke their pipes or go to sleep. There is no danger of the camels escaping or wandering to any distance; they

keep close to the spot where they are set at liberty, and can be rallied and formed in line in a moment. I have more than once seen this done, by the mere voice. When they rest for the night, they generally kneel down in a circle—it is rarely considered necessary to tie one of their fore-legs at the bend of the knee. They always repose on their knees ; and a curious thing in relation to their natural habits is, that I never saw one of them throw himself, *even for a moment*, on his side. During the night's rest the devidjis generally sleep in the midst of the circle formed by the recumbent camels ; if it be a *rainy* winter night they will pitch a little tent, but (I speak of Asia Minor) in this genial climate they nearly always repose like their quiet beasts, *à la belle étoile*. I once invaded a primitive dormitory of this sort, in a curious manner. It was at Boudja, a village (a few miles from Smyrna) where many of the Franks have their country-houses. I was hurrying home on a very dark night—at the entrance of the village, and in the shadow of a garden wall, I stumbled over something, which proved to be a young camel, (they accompany their dams on their journeys almost as soon as they are born ,) and going forward I stumbled again over a sack, and fell headlong through an opening of the ' domestic circle' into the midst of it, and upon the sleeping *devidjis*. I suppose they were surprised at the intrusion, but both men and beasts were very civil—the latter, indeed, never moved, and seemed as passive as if I had been falling over roots of trees."

Camels are formed by nature to endure great variations of temperature. The winds of the desert are sometimes exceedingly keen ; and even in Asia Minor, the winter cold is occasionally very severe. We add one more quotation from Mr. Mac Farlane's interesting letter :—

"The winter of 1827-8 was the coldest that had been known for many years in Asia Minor: yet, on the coldest days, when I, though a native of the north, have been shivering and suffering, I have often seen the camels, at night-fall, *bivouacking* near Smyrna, on the banks of the Meles, (Homer's river—as insignificant as is, or *was*, Fleet-ditch in summer, but a broad, brawling stream in winter) there to pass the inclement night in the open air. Their own instinct teaches them to contract their circle and kneel close together, and their masters merely cover their loins with a material as primitive as their modes of life and encamping. It is a coarse thick sort of cloth, always dyed red, made of camel's wool, mixed with sheep's wool and goat's hair."

Halt of Camels—DENON

The chief repose of a caravan is in the evening. Camels on their march never feed at their ease in the daytime; and nature seems to require that they should have their principal meal, and a few hours rest, from a little before sunset to several hours before sunrise. The principal halts in Syria and Arabia are, therefore, for two hours at noon, when every one endeavours to sleep, and from an hour or so before the sun goes down till the morning twilight.* The pilgrim caravans, however, halt in the night.

* Burckhardt's Syria.

When the caravan is about to proceed over a sterile district, the drivers, several days before they start, give the camels three times the usual quantity of dhourra (millet,) which they force down their throats, and the construction of the stomach enables the animal to ruminate upon this during a very long march.* The expense of maintaining these valuable creatures is remarkably little : a cake of barley, a few dates, a handful of beans, will suffice, in addition to the hard and prickly shrubs which they find in every district but the very wildest of the desert. They are particularly fond of those vegetable productions which other animals would never touch, such as plants which are like spears and daggers, in comparison with the needles of the thistle, and which often pierce the incautious traveller's boot. He might wish such thorns eradicated from the earth, if he did not behold the camel contentedly browsing upon them ; for he thus learns that Providence has made nothing in vain. The sant-tree is amongst these substances, and in this the camel especially delights. These hard shrubs probably contain large quantities of saline matter. In the Great Desert, Riley saw the camels crop off the thorn-bushes as thick as a man's finger. Their teeth are peculiarly adapted for such a diet. Differing from all other ruminating tribes, they have two strong cutting teeth in the upper jaw ; and of the six grinding teeth, one on each side, in the same jaw, has a crooked form : their canine teeth, of which they have two in each jaw, are very strong ; and in the lower jaw the two external cutting teeth have a pointed form, and the foremost of the grinders is also pointed and crooked. They are thus provided with a most formidable apparatus for cutting and tearing the hardest vegetable substance. But the camel is, at the same time, organized so as to graze upon the finest herbage, and browse upon the most delicate leaves ; for

* Burckhardt's Nubia.

his upper lip being divided, he is enabled to nip off the tender shoots, and turn them into his mouth with the greatest facility. Whether the sustenance, therefore, which he finds be of the coarsest or the softest kind, he is equally prepared to be satisfied with, and to enjoy it. In the desert, from Aleppo to Bagdad, Mr. Parsons occasionally passed through little flowery vales, covered with the choicest clover, where the camels grazed ; and in crossing some inconsiderable hills, which, though stony, were not bare of grass, besides producing rosemary, thyme, camphor, marjoram, origanum, and southernwood, the camels seemed delighted to snatch a mouthful from these fragrant shrubs by way of variety, though the horses would not touch them. The young and fresh leaves of the acacia-trees are peculiarly grateful to them ; and the Bedouins, spreading a straw mat under the tree, beat its boughs with long sticks, and sell these tender leaves for camel's food.* The Nubians were one year without any produce from their date-trees, because the Mamelukes, in a time of great scarcity, fed their camels upon palm-leaves. The camel is particularly fond of a plant, the silphium of antiquity, which was valued as a sovereign remedy for all complaints of the human body, from the time of Herodotus to that of Pliny. This plant produces very fatal effects upon all quadrupeds ; but the camels greedily devour it, as did the sheep of old, according to the description of Arrian. The camel is therefore muzzled when he travels through the countries in which silphium abounds, the Cyrenaica ; and lest the drivers should allow him to taste it, and he should thus be destroyed, an additional sum is charged for the hire of the animal through those districts, as a compensation for this chance of injury.† The camel

* Burckhardt's Arabia.

† See Beechey's Northern Coast of Africa, p. 410.

will, indeed, eat every vegetable substance ; and it is affirmed that, in cases of need, he will even distend his stomach with coals. The African caravans carry coals through the desert ; and Riley states, that in the absence of all other food, the camels received a supply of this singular food once a day. They are partly enabled to endure these extraordinary privations by the absorption into their system of the fat of the hump.*

The long establishment of commercial intercourse in Asia, by means of caravans, and the necessity of accommodating large bodies of Mahometan pilgrims from all parts of the East to Mecca, have caused the erection, from time to time, of large reservoirs of water, in almost every frequented road. In the vicinities of the towns, these reservoirs, which are called birkets, are usually supplied from aqueducts. At these convenient places, the caravans always halt.

Camels Watering—DENON.

The Bedouins, and other wandering tribes, sometimes seize upon these wells, and extort a tribute for

* See Dictionnaire Classique d'Histoire Naturelle ; Art *Chameau*, by M. A. Desmoulins.

the permission to draw water. As soon, however, as a caravan arrives upon the desert, the supply of water becomes a matter of chance. The accustomed fountains are often dried up ; and the travellers have to journey forward, in the hopes of discovering some other well, at which they may refresh their camels, and replenish their water-skins.

In a journey with a caravan, it is essentially necessary to carry a considerable quantity of water. Sometimes a portion of the camels bear nothing but water-skins ; but oftener every camel carries one skin, in addition to his ordinary lading. "No idea can be formed by Europeans," says Burckhardt, "of the quantity of water necessary for drinking, cooking, and washing, during a journey through these countries ; but more particularly to allay the thirst of the traveller, whose palate is continually parched by the effects of the fiery ground and air—who has been confined, perhaps, for several days to a short allowance of water, and who lives upon food which, consisting of farinaceous preparations and butter, is calculated to excite thirst in the highest degree. It is a general custom in the caravans in these parts (Nubia,) as well as in the Arabian deserts, never to drink, except when the whole caravan halts for a few minutes for that purpose. . . . . To drink while others do not, exposes a man to be considered effeminate, and to the opprobrious saying, that 'his mouth is tied to that of the water-skin.' . . . . Travellers, in these journeys, drink a great quantity of water when it is plentiful ; I do not exaggerate when I say that I have often drunk in the afternoon, at one draught, as much as would fill two common water bottles. . . . . The usual computation is, that a middling sized skin, or gerbe, holding about fifty or sixty pounds of water, will serve a man for three days."* Captain Lyon says, that when horses travel

* Burckhardt's Nubia, p. 428.

with a caravan in Africa, it is necessary to provide a camel for each horse, for the sole purpose of carrying water. It would appear from these passages, (and such is the fact) that of the water which the camels carry, no part is allowed to themselves. The men and horses have the advantage of their patient drudgery; and they are left, in almost every case, to the precarious supply which they may find at the fountains, which are so thinly scattered over the deserts. Upon the subject of the camel's power of abstinence from water, there have been many exaggerations, which Burckhardt ascribes to the credulity of those travellers "who draw their information only from bragging Arabians or Moors." This power, however, is extraordinary enough to excite our wonder and admiration, without any assistance from fanciful descriptions. The camel often travels three or four days without water, drinking fifty, sixty, or even a hundred pounds weight, when he has an opportunity; and the best camels for transport will sometimes endure a thirst of ten or twelve days, though many of them perish under this privation. When we see what the man and the horse require in those arid countries, such a power in the camel must appear one of the most remarkable provisions of nature.

We may properly, at this point, consider the anatomical construction of the camel's stomach; for without a knowledge of this peculiar organ, the capacity of the animal for enduring hunger and thirst, especially the latter, must appear little short of miraculous. When understood, this structure exhibits a mechanism so admirable, so curious, so perfect in all its parts, and withal so delicate, that we cannot hesitate at once to consider it as beautiful an evidence of Almighty wisdom, as any of the mechanical contrivances of the human body, such as the hand or the eye, with which we are more familiar. The notion of M. Buffon, that the camel's reservoir for water has been pro-

duced by the effects of the animal's long servitude, could only have proceeded from a complete ignorance of the anatomical nature of the parts which he imperfectly described, with particular reference to a favourite theory. When he affirms that the callosities on the camel's knee are the hereditary effects of slavery, the assertion does not *at once* refute itself;—but when he asks us to believe that the domestication of a few thousand years has altered the internal organization of the animal—has *created* (for we must consider it a creation) new muscles which are moved by the will, and cells opening and shutting with valves of the most delicate construction—we might as readily think that the changes of matter had been produced by matter, instead of mind, in any of the results of *human* intellect—that bales of cotton had, in process of time, made the spinning-jenny—or, to come to a closer analogy, that the overflowings of the Thames had constructed the "New Cut" at Paddington. The water of our rivers could just as easily make the reservoirs and locks of a navigable canal, as the necessity for retaining the water of the desert could construct the cells and valves of the camel's additional stomach.

An opinion has been thrown out by Cuvier, that the stomach of the camel is so formed as not only to retain water, but to produce a liquid by secretion. He was led to this conclusion, by seeing the llama, which belongs to the camel family, reject water when he could obtain grass. The idea is as ingenious as it is bold; and if the theory were established, it would go still farther to explain the extraordinary powers of abstinence which the camel possesses.

Some of the later French naturalists have given tolerably accurate descriptions of the camel's stomach; but we shall avail ourselves, in the following account, of the materials afforded to us by our dis-

tinguished countryman, Sir Everard Home, whose examination of this structure has been more careful and minute than that of any other comparative anatomist.

A camel in a dying state having been purchased by the College of Surgeons, Sir Everard Home undertook to examine the construction of its stomach after death, and to report upon it. Mr. Hunter had a camel's stomach amongst his dried preparations, but it was impossible to ascertain the offices of the several cavities, from this imperfect mode of examination; and thus this celebrated anatomist doubted whether the second cavity, which contains the water-cells, differed in its uses from that of other ruminating animals. It was highly desirable to set this question at rest. The camel, therefore, which had been purchased by the College, and which gradually grew weaker, was at length killed, after being incited to drink three gallons of water, having taken none for three days previously. Its death was immediate, for it was *pithed*, or instantly deprived of sensibility, by passing a poinard between the skull and first vertebra of the neck.* Its head was fixed to a beam to prevent the body falling to the ground after it was dead. The animal was kept suspended that the viscera might remain in their natural state, and in two hours the cavities of the chest and abdomen were laid open. The following is Sir E. Home's description of this animal's stomach, founded upon a most careful examination:†—

"The camel's stomach, anteriorly, forms one large bag, but when laid open, this is found to be divided

* "In the common mode of pithing cattle, the medulla spinalis (spinal marrow) only is cut through, and the head remains alive, which renders it the most cruel mode of killing animals that could be devised."—Sir E. Home.

† Comparative Anatomy, vol. i., p. 169.

into two compartments, on its posterior part, by a strong ridge, which passes down from the right side of the orifice of the œsophagus, in a longitudinal direction. This ridge forms one side of a groove that leads to the orifice of the second cavity, and is continued on beyond that part, becoming one boundary to the cellular structure met with in that situation. From this ridge, eight strong muscular bands go off at right angles, and afterwards form curved lines, till they are insensibly lost in the coats of the stomach. These are at equal distances from each other, and, being intersected in a regular way by transverse muscular septa, form the cells.

"This cellular structure is in the left compartment of the first cavity, and there is another of a more superficial kind on the right, placed in exactly the opposite direction, made up of twenty-one rows of smaller cells, but entirely unconnected with the great ridge.

"On the left side of the termination of the œsophagus, a broad muscular band has its origin from the coats of the first cavity, and passes down in the form of a fold parallel to the great ridge, till it enters the orifice of the second, where it takes another direction. It is continued along the upper edge of that cavity, and terminates within the orifice of a small bag, which may be termed the third cavity.

"This band on one side, and the great ridge on the other, form a canal which leads from the œsophagus down to the cellular structure in the lower part of the first cavity.

"The orifice of the second cavity, when this muscle is not in action, is nearly shut: it is at right angles to the side of the first. The second cavity forms a pendulous bag, in which there are twelve rows of cells, formed by as many strong muscular

bands, passing in a transverse direction, and intersected by weaker muscular bands, so as to form the orifices of the cells. Above these cells, between them and the muscle which passes along the upper part of this cavity, is a smooth surface extending from the orifice of this cavity to the termination in the third.

"From this account it is evident that the second cavity neither receives the solid food in the first instance, as in the bullock, nor does the food afterwards pass into the cavity or cellular structure.

"The food first passes into the first compartment of the first cavity, and that portion of it which lies in the recess, immediately below the entrance of the œsophagus, under which the cells are situated, is kept moist, and is readily returned into the mouth along the groove formed for that purpose, by the action of the strong muscle, which surrounds this part of the stomach, so that the cellular portion of the first cavity in the *camel* performs the same office as the second in the ruminants with horns.

"While the camel is drinking, the action of the muscular band opens the orifice of the second cavity at the same time that it directs the water into it; and when the cells of that cavity are full, the rest runs off into the cellular structure of the first cavity immediately below, and afterwards into the general cavity. It would appear that camels, when accustomed to go journeys, in which they are kept for an unusual number of days without water, acquire the power of dilating the cells so as to make them contain a more than ordinary quantity as a supply for their journey; at least such is the account given by those who have been in Egypt.

"When the cud has been chewed, it has to pass along the upper part of the second cavity before it can reach the third. How this is effected without

its falling into the cellular portion, could not, from any inspection of dried specimens, be ascertained; but when the recent stomach is accurately examined, the mode in which this is managed becomes very obvious.

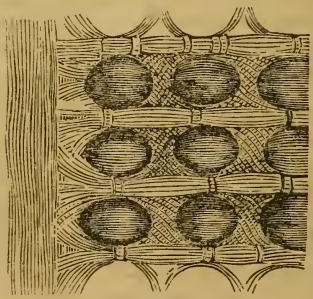
"At the time that the cud is to pass from the mouth, the muscular band contracts with so much force, that it not only opens the orifice of the second cavity, but acting on the mouth of the third, brings it forward into the second, by which means the muscular ridges that separate the rows of cells are brought close together, so as to exclude these cavities from the canal through which the cud passes."

The description thus far of the camel's stomach exhibits the beautiful and very curious mechanism which enables this animal to live in sandy deserts, with precarious supplies of water. In this cellular construction of the stomach, the camel entirely differs from other ruminating animals. It also differs in having a transverse contraction of the fourth cavity of the stomach, and this has led to the assertion that the camel has a fifth cavity, into which error even Daubenton and Cuvier have fallen. The points of similarity and of difference between the stomach of the camel and of the other ruminating animals, such as the ox tribe, are thus stated by Sir E. Home :—

On a comparative view of the stomach "of the *bullock* and *camel*, it appears that in the *bullock* there are three cavities formed for the preparation of the food, and one for its digestion. In the *camel*, there is one cavity fitted to answer the purposes of two of the *bullock*; a second employed as a reservoir for water, having nothing to do with the preparation of the food; a third so small and simple in its structure, that it is not easy to ascertain its particular office. It cannot be compared to any of the preparatory

cavities of the bullock, as all of them have a cuticular lining, which this has not: we must therefore consider it as a cavity peculiar to ruminants without horns, and that the fourth is the cavity in which the process of digestion is carried on."*

The following engraving represents the muscular structure, by means of which the orifices of the cells in the camel's stomach are closed, to prevent the solid food from falling into them. The cells are exposed, showing the bottom of each, which is formed of muscular fibres, by which they are enabled to throw out their contents. The parts are diminished to a ninth of their natural size.



Cells of the Camel's Stomach

* Vol. i., p. 173, 4.

Chapter X.

THE CAMEL—(*continued.*)

The habits of mankind in the East have undergone less change, during many centuries, than Europeans would, at first sight, think possible. Many of the descriptions of the sacred historians find an exact parallel in the narratives of modern travellers. The agriculture and the commercial intercourse of the oriental nations are as little changed as their food, their dress, and their manners ; and their intellectual progress, during the last two thousand years, if it has not been at a stand, has been so slow as to be hardly perceptible. This perpetuation of the habits of a remote antiquity may be very much attributed to the geographical features, the climate, soil, and natural productions of the countries. For instance, in a soil and temperature peculiarly adapted to the ripening of fruit, the date would still flourish, as it flourished in the time of the prophets ; and whilst the people could gather with little trouble this great article of sustenance, they would have little motive to cultivate grain, which much of their soil is unfitted to produce. Thus, the improvements of agriculture, demanding and rewarding improvements in various other of the useful arts, have had no place among them.

Their vast deserts, producing but few of the necessaries, and none of the luxuries of life, rendered, in the earliest ages, an extensive commerce the necessary condition of pleasurable existence. And commerce was made easy by the camel, the native of these arid plains ; through whose means they have been

traversed with comparative facility, from the earliest times. But navigation by the "ship of the desert" did not require, and was not capable of, that gradual improvement which has transformed the frail raft, or rude canoe, into a floating palace,

"Arm'd with thunder, clad with wings,"—

the crown and triumph of ages, of thought and labour; and the greatest conquest which the mind of man has achieved over the difficulties, in which, for the developement of his wonderful powers, it has pleased God to place him.

Thus, while the improvements of European commerce, itself the creature of yesterday, have at length succeeded in bringing the cotton of India, to be manufactured in England into cloth, and have returned it to the Hindoos cheaper than these people could prepare it for themselves, with all their abundant supply of human labour, at its lowest price; the caravans of Egypt and Arabia are still carrying on the traffic of the age of Solomon, with scarcely any change, either in the articles of the commerce, or the manner in which it is pursued. The caravans of Egypt bring to Cairo ostrich feathers, gum, gold dust, and ivory, from Abyssinia and the countries beyond it; while those of Arabia exchange there the spices, coffee, perfumes, and muslin of Hindostan. By means of caravans the productions even of China are distributed, at the present day, through central Asia; while, by the extension of the camel over northern Africa, the articles which are sold in the markets of Timbuctoo are exchanged for the equally valuable commodities of Samarcand and Thibet. There are caravans trading between Cairo and the interior of Africa, and penetrating far beyond the limits of modern European discovery, which are wholly employed in the commerce of slaves,—the most disgraceful traffic by which one portion of the human

race has ever inflicted injury upon another. Burckhardt describes the treatment which the slaves of the African caravans experience, as "rather kind than otherwise." He says "they are seldom flogged, and are well fed." This is before they enter upon the desert; for as confinement injures their health, when they remain in the towns through which they pass, and as the negroes look upon houses as prisons, the traders allow them, in these inhabited places, a little liberty. But after the caravan reaches the open country, they are treated in a manner at which humanity shudders. "On the journey they are tied to a long pole, one end of which is fastened to a camel's saddle, and the other, which is forked, is passed on each side of the slave's neck, and tied behind with a strong cord so as to prevent him from drawing out his head; in addition to this, his right hand is also fastened to the pole at a short distance from the head, thus leaving only his legs and left arm at liberty; in this manner he marches the whole day behind the camel; at night he is taken from the pole and put in irons."* And yet this horrible mode of transport is not so bad as the abominations of a slave *ship*, in which hundreds of miserable wretches are crammed into a hold, till they die of utter exhaustion or disease, and avarice is deprived of its victims. The slave traders of the caravans are Mahometans,—the European slave-merchants call themselves Christians. The infidel carries his victim to receive the comparatively light yoke of domestic service—the Christian dooms his prey to the unutterable horrors of West Indian bondage.

The annual pilgrimage to Mecca, enjoined by the Mahometan religion, has materially contributed to keep up and extend the commercial intercourse of the people of Asia. In this point of view, the ceremony,

* Burckhardt's Nubia, p. 335.

though one of superstitious origin, and accompanied with many absurd rites, has greatly benefited those countries which are far distant from each other, and the inhabitants of which, without such excitement, would seldom have any communication. The pilgrimage to Mecca is an institution which unites all the Mahometans, from Abyssinia to India, in a common bond of religious observance and commercial traffic ; and it has thus had an extraordinary influence upon the habits of that large body of mankind who are followers of the doctrines of the Koran. In the present day, the hadj, or pilgrimage, has gradually decreased in numbers—a circumstance which is attributed both to a growing indifference of the Mahometans to their religion, and an increase of expense attending the journey. It appears from Burckhardt, that the pilgrimage from Damascus to Mecca, with the Syrian caravan, cannot now be performed, in the most humble way, under a cost of two thousand five hundred piastres, or 125*l.* sterling. And yet, at the present day, there are from five to seven great caravans, which regularly arrive at Mecca, after the feast of Bairam, which follows the Ramadhan.* The Syrian caravan is the most important, and has always been the strongest, since the time when the caliphs, in person, accompanied the pilgrims from Bagdad. It has to perform a journey of thirty days across the desert, from Damascus to Medina ; and as a change of camels is required for this purpose, and a large number of spare camels are brought to supply such as fail on the road, almost every town in the eastern part of Syria furnishes its beasts for this service. The Egyptian caravan, which starts from Cairo, has a very dangerous and fatiguing journey. Its route along the shores of the Red Sea exposes it to the attacks of wild and

* For an explanation of the Mahometan Calendar, see the Companion to the Almanac for 1828.

warlike tribes of Bedouins, who frequently endeavour to cut off a part of the caravan by open force. The watering places, too, are very few ; and thus the privations of the Egyptian hadj are uncommonly great. The Persian caravan comes from Bagdad. The pilgrims are generally sectaries, and are consequently exposed to great extortions. An African caravan starts from Marocco, by Tunis and Tripoli along the coast of Egypt. The number of Barbary pilgrims is now reduced to about two thousand, and the caravan is not regular, many preferring a passage by sea to Alexandria. As late as 1803 a caravan from Yemen, composed of Persians and Indians, regularly travelled from that harbour along the coast. The Indian pilgrims now generally make the journey by sea. In addition to the regular caravans, large bodies of Bedouins resort to Mecca, during peace, from every region of the desert ; and mendicants, whether Hindoos, Malays, Cashmerians, Persians, Arabians, Abyssinians, or Negroes, find their way to the city of the prophet, from all parts of the coast. Many of these beggars perform the pilgrimage as proxies for richer men, who pay for their passage from their respective countries ; and when they arrive at the sacred city, they are thrown entirely upon the charity of other hadjys.* To have visited the tomb of Mahomet, which entitles the pilgrim to the proud distinction of being a hadjy, is an honour to which the meanest devotee aspires ; and thus it is, that within the walls of Mecca are annually assembled vast bodies of Asiatics and Africans, who have toiled thither, sustaining every privation and misery, and of whom many, worn out with fatigue, never return to claim the rewards of their enthusiasm. The camel sustains such an important part in these extraordinary journeys, that we shall attempt to trace

* For a minute and interesting account of the hadj caravans, see Burckhardt's Arabia.

the course of a single caravan of pilgrims; and as that of Cairo is one of the most important, having, as well as the Syrian, the distinction of a sacred camel, and as it has been described by ancient as well as modern writers, a rapid sketch of its march may be given. We may thus develope, in a picturesque way, some of the remarkable circumstances attending the progress of a vast number of camels, laden with the merchandise of unexplored regions; some bearing "Barbaric pearl and gold," others carrying water-skins; and all exposed to perish in the desert, at the command either of avarice or of enthusiasm, patiently doing the bidding of those who make this perilous journey, "some to Mammon, some to Mahomet," as old Purchas expresses it. In the words of the same quaint writer, "let us desire the reader to have patience, and goe along, on this pilgrimage, with one of these caravans, thorow these Arabian deserts, to Mecca and Medina."

The splendours of the ancient pilgrimages have been described by the Arabian historians in the glowing imagery of their country. Their attention was principally directed to the Syrian caravan, with which the caliphs (the successors of the prophet) often travelled in person. It is remarkable that none of the Ottoman emperors from Constantinople ever performed the pilgrimage: so that the Hadj from Cairo is wanting in that magnificence which the presence of a despot, having the wealth of the East at his command, would naturally give. Makrisi, an oriental author quoted by Burckhardt, has written a treatise on the pilgrimages which the caliphs attended; from which we learn that the great Haroun Alraschid performed the pilgrimage nine times —that in the year of the Hegira 631, when the mother of the last of the Abassides accomplished this injunction of the Koran, her caravan consisted of one hundred and twenty thousand camels. One of the

caliphs employed nine hundred camels in the transport of his wardrobe ;—another (and he had many imitators) carried snow with him to cool sherbet upon the road. Egypt, however, sometimes vied with the luxurious pomp of Bagdad ; for, in the year of the Hegira 719, the Sultan of that country carried with him five hundred camels, for the transport of sweetmeats and confectionary only ; and two hundred and eighty, for pomegranates and other fruits. In his travelling larder were one thousand geese, and three thousand fowls. Ludovico Verthema, an Italian, who journeyed in the East, A. D. 1503, and went with the Syrian caravan to Mecca, says that the caravan of Cairo consisted of sixty-four thousand camels.* At the present day, both the number of persons making the pilgrimage, and the splendour with which it is conducted, are greatly lessened ; but the caravan still offers the same remarkable mixture of pomp and misery, of abundance and want, of superstition and licentiousness, which appear to have prevailed from the earliest times. Not one tenth part of the caravan are real pilgrims; but the motley group is made up of the attendants of the sacred camel, people attached to the Pasha, soldiers, servants of soldiers, merchants, pedlars, camel-drivers, coffee and pipe-waiters, Bedouins, and large numbers of licentious women, called dancing girls. The richer pilgrims put themselves under the protection of a Mekowem (one who speculates in furnishing camels and provisions to the Hadj ;) and these persons, unless they become bankrupt before the contract is completed, prepare refreshments for their customers, pack their goods, load their camels, and provide a man to lead each beast during the night marches. But the poorer pilgrims, who cannot afford to pay for these accommodations, are persecuted by the Mekowem, who fee the Pasha to connive at their injustice. They are thus obliged

* Hakluyt's Voyages.

to march in the rear of the caravan, to encamp on the worst ground, and to fill their water-skins the last. They have no protection from the soldiers, who rob them in the night, and even sometimes murder them ; and the pilfering Bedouins keep them in perpetual alarm for their little property. It is no wonder, therefore, that many hundreds of these poor pilgrims every year perish of fatigue and terror ; while the rich Hadjys sleep comfortably in their camel-litters, surrounded, as far as is possible in a desert of forty days' journey, with every gratification of luxury.*

The Hadj caravan starts from Cairo twenty days after the great fast of the Ramadhan is ended. Purchas has given an elaborate description of its ancient splendours. "The caravan," he says, "is divided into three parts ; the foreward, the maine bataille, and the rereward. The foreward containeth about a third part of the people. Within a quarter of a mile followeth the maine bataille, with their ordnance, gunners, and archers ; the chief physician, with his ointments and medicines for the sick, and camels for them to ride on. Next goeth the fairest camel that may be found in the Turk's dominions, decked with cloth of gold and silk, and carrieth a little chest, in form of the Israelitish ark, containing in it the Alcoran, all written with great letters of gold, bound between two tables of massive gold. This chest is covered with silke during the voyage ; but, at their entering into Mecca and Medina, it is covered with cloth of gold, adorned with jewels. This camel is compassed about with Arabian singers and musicians, singing alway, and playing upon instruments. After this follow fifteene other most faire camels, every one carrying one of the above said vestures, being covered from top to toe with silke. Behind these, goe the twentie camels which carry the captaines money and provision. After followeth the standard of the Great Signior, accompa-

* See Burckhardt's Syria and Arabia.

nied with musicians and souldiers, and behind these, lesse than a mile, followeth the rereward, the greatest part pilgrimes ; the marchants, for securitie, going before ; for in this voyage it is needfull and usuall, that the captaines bestow presents, garments, and turbans, upon the chiefe Arabians, to give them free passage, receiving sometimes, by pilferings, some damage notwithstanding."

Mr. Parsons, who saw the pilgrim caravan set out from Cairo about forty years ago, has given a programme of the procession, drawn up with all the precision of a herald, and which occupies ten pages of his quarto work. The cavalcade was six hours in passing him. The most striking appearance to an European must have been the camels, in every variety of splendid trappings, laden with provisions, and clothes, and cookery apparatus, and water-skins, and tents, and artillery, and holy Sheiks, and Mamelukes. There were camels "with two brass field-pieces each"—others "with bells and streamers"—others "with men beating kettle-drums"—others "covered with purple velvet"—others "with men walking by their sides, playing on flutes and flageolets"—others "handsomely ornamented about their necks, their bridles being studded with silver, intermixed with glass beads of all colours, and ostrich feathers on their foreheads"—and last of all "the sacred camel, an extraordinary large camel, with a fine bridle studded with jewels and gold, and led by two holy sheiks, in green, a square house or chapel on his back." In addition to these camel splendours there were horses with every variety of caparison ; mamelukes, and pikemen, and janissaries, and agas, and the Emir Hadgy, (commander of the pilgrimage) in robes of satin—to say nothing of numberless "buffoons playing many pranks." Mr. Parsons sums up the splendour of this pilgrim caravan by

declaring that "it is by much the grander exhibition than the spectacle of the Lord Mayor and Alderman going in procession through the City of London;"—but this may be doubted by some as the exaggeration of a traveller, while others may deem it impossible!

Differing from the usual practice of commercial caravans, the pilgrimage is performed chiefly by night. The caravan generally moves about four o'clock in the afternoon, and travels without stopping till an hour or two after sunrise. A large supply of torches is carried from Cairo, to be lighted during the hours of darkness. The Bedouins, who convey provisions for the troops, travel by day only, and in advance of the caravan. The watering-places on the route are regularly established. Each is supplied with a large tank, and protected by soldiers who reside in a castle by the well, throughout the year. On parts of the route the wells are frequent, and the water good; but on others three days of the journey frequently intervene between one watering-place and another,—and the fountain is often brackish. When the Cairo caravan is completely assembled, and the formalities which we have just described are gone through, the great body of travellers begin to move, the stations of the different parties of Hadjys, according to their provinces and towns, being appointed, and rigidly observed throughout the march. This order is determined by the geographical proximity of the place from which each party comes. At Adjeroud, where the Egyptian caravan halts on the second day's march, it is supplied with water from Suez; and here it reposes a day and a night, to prepare for a forced march of three days and two nights, through a region where there is no water, the desert of El Tyh, which nearly extends from the

head of one gulf of the Red Sea to the other—that is, from Suez to Akaba. The Hadj route is circuitous. It is here that the privations both of men and quadrupeds commence. The splendid trappings of the camels, their velvets and their bells, have lost their attraction ; but their power of endurance becomes the safety of the pilgrims : while the richly caparisoned horse, impatient of thirst, and more easily subdued by fatigue, is more frequently a burden to the caravan than an advantage. The route of the Egyptian caravan, after it passes the Akaba, lies by the shores of the Red Sea for nearly six hundred miles ; and, therefore, it cannot properly be said at any time after the first ten days' march to be upon the desert, as the Syrian caravan is for thirty days. But its difficulties are more numerous ; and it has to pass regions quite as arid and inhospitable. Every part of Arabia is covered with sandy plains ; and when the mountain steeps are crossed, the long extended valleys rarely offer water. The Arabic language is rich in words expressing every variety of desert, differing from each other by very slight shades of meaning : thus, they have terms descriptive of a plain—a plain in the mountain—a plain covered with herbs—a naked sandy desert—a stony desert—a desert with little spots of pasturage—a desert without water.* Although the caravan route from Cairo to Mecca presents, with the exception of the desert El Tyh, none of those enormous wastes, like the Great Southern Desert of Arabia, "where the Arabs have only the sun and the stars to direct their way ;" nor is, like the Libyan desert, "a sea without waters, an earth without solidity, disdaining to hold a foot-print as a testimony of subjection,"† there are many tracts,

* See Humboldt's Voyage, tom. vi. Note to p. 67. † Purchas.

as well as the desert from Suez to Akaba, in the forty days' journey, which offer to the pilgrim abundance of fatigue and suffering. If water fail, as it sometimes does, even at the wells at particularly dry seasons—if the water-skins evaporate more quickly than they ordinarily do—the camel's power of endurance is severely tried—for his wants are the last attended to. Happy are the pilgrims if the rain of the mountains have filled the banks of some little river. Even the much-enduring camels, at the sight of water, after many days' abstinence, break the halters by which they are led, and in rushing or stumbling down the banks, throw off their loads, and occasion infinite disorder.* Mr. Buckingham has, however, described a scene, in which the patience of the camel is contrasted in a remarkable way with the eagerness of the horse :—

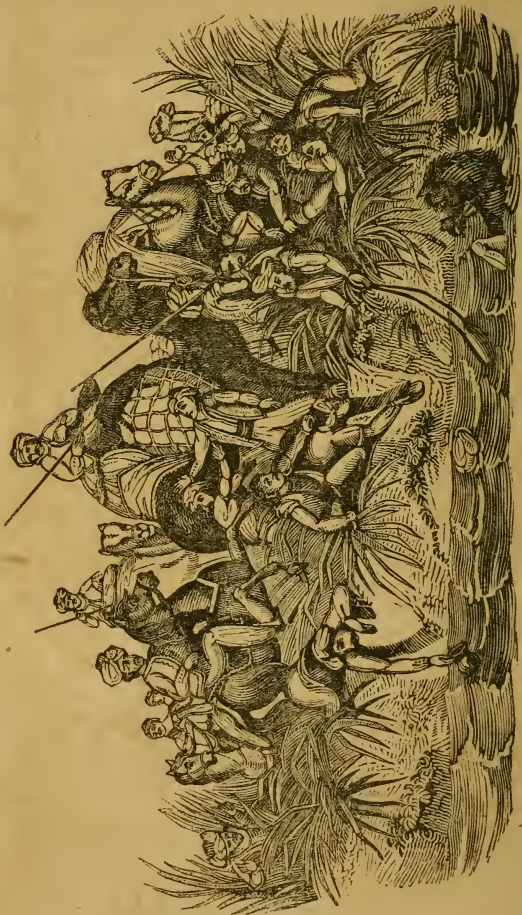
"It was near midnight when we reached a marshy ground, in which a clear stream was flowing along, through beds of tall and thick rushes, but so hidden by these, that the noise of its flow was heard long before the stream itself could be seen. From the length of the march, and the exhausting heat of the atmosphere, even at night, the horses were exceedingly thirsty : their impatient restlessness, evinced by their tramping, neighing, and eager impatience to rush all to one particular point, gave us, indeed, the first indications of our approach to water, which was perceptible to their stronger scent long before it was even heard by us. On reaching the brink of this stream, for which purpose we had been forcibly turned aside, by the ungovernable fury of the animals, to the southward of our route, the banks were found to be so high above the surface of the water, that the horses could not reach it to drink. Some, more impatient than the rest, plunged themselves

* Burckhardt's Nubia, p. 368.

and their riders at once into the current ; and, after being led swimming to a less elevated part of the bank over which they could mount, were extricated with considerable difficulty ; while two of the horses of the caravan, who were more heavily laden than the others, by carrying the baggage as well as the persons of their riders, were drowned. The stream was narrow but deep, and had a soft muddy bottom, in which another of the horses became so fastly stuck, that he was suffocated in a few minutes. The camels marched patiently along the edge of the bank, as well as those persons of the caravan who were provided with skins and other vessels containing small supplies of water ; but the horses could not, by all the power of their riders, be kept from the stream, any more than the crowd of thirsty pilgrims, who, many of them having no small vessels to dip up the water from the brook, followed the example of the impatient horses, and plunged at once into the current. . . . . This scene, which, amidst the obscurity of the night, the cries of the animals, the shouting and quarrelling of the people, and the indistinct, and perhaps exaggerated apprehensions of danger, from a totally unexpected cause, had assumed an almost awful character, lasted for upwards of an hour."*

Mr. Buckingham's work is illustrated with woodcuts, and this scene is the subject of a spirited representation. It appeared to us, however, not sufficiently to express the quiet march of the camels along the edge of the bank, for some were seen rushing to the stream. Mr. Buckingham informs us that the camels were forced into the water by the rush of men and horses. The following engraving adheres more literally to the preceding text :—

* Buckingham's Mesopotamia, vol. ii. p. 8



Rush of a Caravan to a Stream in the Desert.

The extraordinary scent of the camel enables him to discover water at a great distance ; and thus, in the wildest regions of the desert, the caravan is often preserved from destruction by this instinct. In the neighbourhood of wells, such as are found in the Hadj routes, the camels, after passing rocky districts, that fatigue them more than several days' march upon the plains, surfeit themselves with water. This renders them still weaker, and they often perish. Camels' carcasses are as frequently found in the accustomed roads as in the deserts ; and when the pilgrimage leaves Mecca, the very air is corrupt with the bodies of camels that have died of exhaustion after performing the journey.* On the road, when a camel falls, he is usually killed according to the Mahometan fashion, which is to turn his head toward Mecca and cut his throat. On such occasions the Arabs wait in savage impatience the signal of the owner, ready to plunge their knives into the poor animal, and tear off a portion of the flesh. At seasons of great privation, the water which is found in the cells of the camel's stomach is eagerly swallowed by the Arabs.

The fourth, fifth, and sixth days' marches of the Cairo Hadj, through the deserts of Tyh, are exceedingly exhausting and dangerous. The weary pilgrims halt for a day and a night at the castle of Nakhel, in the middle of the desert, where they replenish their water-skins ; but they march again in the evening of the seventh day, and, finding no water in their route, halt not till the morning of the tenth, when they have reached the plain and castle of Akaba. This district presents fearful monuments of the sufferings of the caravan. "Past the Akaba," says Burckhardt, "near the head of the Red Sea,

* Burckhardt's Arabia.

the bones of dead camels are the only guides of the pilgrim through the wastes of sand." It is, perhaps, rarely that the pilgrims perish with thirst on the road, unless some of them wander from the main body; or the caravan losing its way, overshoots the day's station. Where there are no landmarks but those which are formed by the traces of former devastation —by "the bones of dead camels"—such a circumstance is not difficult to happen even to the most experienced guides. The water-skins are, in such cases, emptied, and horses and men perish in a state of miserable despair, while the wearied camels drop with exhaustion. Probably these afflictions happen more frequently to private caravans than to those of the pilgrimage. Burckhardt relates an interesting story of such an event in the Nubian desert, which beautifully illustrates the surprising instinct of the camel. It was told to him by a man who had himself suffered all the pangs of death :—

"In the month of August, a small caravan prepared to set out from Berber to Daraou. They consisted of five merchants and about thirty slaves, with a proportionate number of camels. Afraid of the robber Naym, who at that time was in the habit of waylaying travellers about the well of Nedjeym, and who had constant intelligence of the departure of every caravan from Berber, they determined to take a more eastern road, by the well Owareyk. They had hired an Ababde guide, who conducted them in safety to that place, but who lost his way from thence northward, the route being very unfrequented. After five days' march in the mountains their stock of water was exhausted, nor did they know where they were. They resolved, therefore, to direct their course toward the setting sun, hoping thus to reach the Nile. After two days' thirst, fifteen slaves and

one of the merchants died; another of them, an Ababde, who had ten camels with him, thinking that the camels might know better than their masters where water was to be found, desired his comrades to tie him fast upon the saddle of his strongest camel, that he might not fall down from weakness; and thus he parted from them, permitting his camels to take their own way: but neither the man nor his camel were ever heard of afterwards. On the eighth day after leaving Owareyk, the survivors came in sight of the mountains of Shigre, which they immediately recognised; but their strength was quite exhausted, and neither men nor beasts were able to move any farther. Lying down under a rock they sent two of their servants, with the two strongest remaining camels, in search of water. Before these two men could reach the mountain, one of them dropped off his camel deprived of speech, and able only to move his hands to his comrade as a signal that he desired to be left to his fate. The survivor then continued his route; but such was the effect of thirst upon him that his eyes grew dim, and he lost the road, though he had often travelled over it before, and had been perfectly acquainted with it. Having wandered about for a long time, he alighted under the shade of a tree, and tied the camel to one of its branches; the beast, however, smelt the water (as the Arabs express it,) and, wearied as it was, broke its halter, and set off galloping furiously in the direction of the spring, which, as it afterwards appeared, was at half an hour's distance. The man, well understanding the camel's action, endeavoured to follow its footsteps, but could only move a few yards; he fell exhausted on the ground, and was about to breathe his last, when Providence led that way, from a neighbouring encampment, a Bisharye Bedouin, who, by throwing water upon the man's face, restored him to his senses,

They then went hastily together to the water, filled the skins, and returning to the caravan, had the good fortune to find the sufferers still alive. The Bisharye received a slave for his trouble. My informer, a native of Yembo, in Arabia, was the man whose camel discovered the spring ; and he added the remarkable circumstance, that the youngest slaves bore the thirst better than the rest, and that, while the grown up boys all died, the children reached Egypt in safety."

The phenomenon of the *mirage* excites in the pilgrim of the deserts those alternations of hope and disappointment, which add to the miseries of his actual situation. He sees before him lakes of water, which are gone the instant he arrives at the spot where he fancied they offered their refreshment to his feverish lips. The Arabs are familiar with this remarkable appearance, and they are seldom deceived by it ; although, if the mirage and a real stream could be seen at the same time, it would be difficult to distinguish the reality from the delusion.* The guides of the European traveller often amuse themselves by calling to him that water is in sight, when they are upon the most thirsty spots of a sandy or gravelly plain. Burckhardt has described the mirage with his usual felicity :†—"During the whole day's march we were surrounded on all sides by lakes of mirage, called by the Arabs, Serab. Its colour was of the purest azure, and so clear that the shadows of the mountains which bordered the horizon were reflected in it with the greatest precision, and the delusion of its being a sheet of water was thus rendered still more perfect. I had often seen the mirage in Syria and Egypt, but always found it of a whitish colour, rather resembling a morning mist, seldom lying steady on the plain, but in continual vibration ; but

* Lyon, p. 347. † Nubia, p. 193.

here it was very different, and had the most perfect resemblance to water. The great dryness of the air and earth in this desert may be the cause of the difference. The appearance of water approached also much nearer than in Syria and Egypt, being often not more than two hundred paces from us, whereas I had never seen it before at a distance of less than half a mile. There were at one time about a dozen of these false lakes around us, each separated from the other, and for the most part in the low grounds." The mirage is caused by the extraordinary refraction which the rays of the sun undergo, in passing through masses of air in contact with a surface greatly heated. These atmospheric delusions are not confined to the appearance of water in the desert. The traveller, fainting beneath a burning sun, sees a tree in the distance, sufficiently large for him to find a shade beneath its boughs. He quickens his pace, hoping to enjoy half an hour of refreshing coolness, before his camels shall have passed. The tree is really a miserable shrub, that does not afford shade enough to shelter one of his hands. This magnifying of objects is produced by the slight vapour which rises when the heat is greatest. When the sun gleams on the sand-hills, they appear at an immense distance; the traveller hopes that his camels may be spared the pain of crossing these slippery ascents,—when in a few minutes he is close upon them, and sees a man or a camel, within a stone's throw, toiling to the top.* As the sun ascends towards the zenith, and the earth and the currents of air assume different temperatures, the phenomena of the mirage present numerous modifications. Humboldt states that in the plains of South America, where the air is very dry, he often saw the images of troops

* See Lyon, p. 347.

of wild oxen, suspended in the air, long before the eye could see the oxen themselves; and the small currents of air were of such a variable temperature, that the legs of some appeared to rest upon the ground, while others were elevated above it. In Arabia, Niebuhr observed the image of an animal reversed, before he saw the direct image. Sometimes towers and large masses of apparent buildings are seen upon the horizon, which disappear at intervals, without the traveller being able to decide upon the true forms of the objects, which are probably little sand hills, beyond the ordinary range of vision.* All these phenomena are modifications of the mirage, though the name is generally applied to the unreal lakes of the desert. The Persian and Arabian poets make frequent allusion to these magical effects of terrestrial refraction.

Such delusive appearances must have a tendency to fill the mind of the inexperienced traveller with a vague and somewhat awful wonder. Upon a sandy surface, too, the stillness of the desert is particularly impressive. Passing over such a soil the camel's tread produces scarcely any sound. Captain Lyon says, "I have sometimes walked at night from the kafflé" (caravan,) "and have experienced a sensation I am unable to describe, as I felt the wind blow past me, and heard the sound which my figure caused me to make by arresting its progress." It is at such moments that the European traveller may think of the solemn denunciation of the prophet against Babylon; and may fancy, for a while, that he is the only tenant of the sandy wastes: "The sea is come up upon Babylon, she is covered with the multitude of the waves thereof: her cities are a desolation, a dry land, and a wilderness, a land wherein no man

* Humboldt's Voyages, liv. vi. chap. xvii.

dwelleth, neither doth any son of man pass thereby."* —Of the tediousness of a journey through these arid regions, there can be no doubt ; and Mr. Buckingham seems to have felt the full force of its monotony : "In walking my horse a gentle pace, if I mounted the last in the caravan, I could gain the head of it in two hours, though our line extended nearly two miles in length ; when, as was the practice of most of the other horsemen of the party, we dismounted on the grass, suffered our horses to feed there, and either lay down or smoked a pipe, for nearly an hour, until the caravan had all passed us again. This was repeated at every similar interval ; so that, in an uninteresting part of the country, where there was no picturesque landscape to charm the sight, not a tree to relieve the monotonous outline of the hills, nor sufficient verdure to clothe their rocky sides—where either we were lighted only by the stars, or scorched by the sun an hour after its rising—its tediousness may be easily conceived." And yet even the desert has its pleasures,—when the caravan reaches some wished-for fountain, and finds a patch of verdure, or a few shrubs, after many hours of privation. Major Denham has prettily described a scene of this nature :—"The day had been oppressively hot, my companions were sick and fatigued, and we dreaded the want of water. A fine dust, arising from a light clayey and sandy soil had also increased our sufferings : the exclamations of the Arab who first discovered the wells, were indeed music to our ears ; and after satisfying my own thirst, with that of my weary animals, I laid me down by one of the distant wells, far from my companions ; and these moments of tranquillity, the freshness of the air, with the melody of the hundred songsters that were perched amongst the creeping plants, whose flowers

* Jeremiah.

threw an aromatic odour all around, were a relief scarcely to be described." The happiness of such a contrast must naturally be great ; and so many writers have described this pleasure, that the idea has passed from the poetical into the popular language even of the west—and thus the recollection of an interval of joy, amidst a life of suffering—

"The greenest spot
In memory's waste"—

is the Oasis in the desert.

And yet to an imaginative mind, stored with knowledge, and ardent in the pursuit of new objects of research, even the dreariest wilds of the desert have their charm. Burckhardt, according to Captain Beechey, "has frequently been heard to declare that his most pleasant hours in travelling had been passed in the desert ;" and Captain Beechey, himself an adventurous traveller, has well explained this. "If the desert have terrors peculiar to itself, it has also its peculiar pleasures. There is something imposing, we may say sublime, in the idea of unbounded space which it occasionally presents ; and every trifling object which appears above its untenanted surface, assumes an interest which we should not, on other occasions, attribute to objects of much greater importance. The little romance which its stillness and solitude encourage, is at the same time grateful to the feelings ; and one may here dream delightfully of undisturbed tranquillity and independence, and of freedom from all the cares, the follies, and the vices of the world." A principal source of this calm of the mind, when surrounded by real hardships, and cheerless solitudes, must spring from that feeling which is one of the most elevating of all the various trains of human thought,—the consciousness of an earnest determination to struggle with difficulties. Whether the privations of the uncivilized, or the

crosses of the social life are to be overcome, to meet the evil, whatever it be,—

> "Nor bate a jot
> Of heart or hope, but still bear up and steer
> Right onward;"—

this is in itself a triumph; and the world can give nothing better than those moments when a man feels that he has looked dangers and annoyances in the face, and that he shall surmount them.

The hot wind of the deserts has been described as producing the most fatal effects,—as suffocating men and beasts in an instant. This is one of the exaggerations which attach to such remarkable phenomena, they being generally described by persons who have only heard of their results. Burckhardt, who seldom relates anything but of his own knowledge, was very anxious to prove the truth of these relations; and, according to the accounts which he had from the Arabs, as well as from his own experience, the evil, though a serious one, is not so tremendous as travellers in general have pretended.

"I again inquired, as I had often done before, whether my companions had often experienced the semoum (which we translate by the 'poisonous blast of the desert,' but which is nothing more than a violent southeast wind.) They answered in the affirmative, but none had ever known an instance of its having proved fatal. Its worst effect is, that it dries up the water in the skins, and so far it endangers the traveller's safety. In these southern countries, however, water-skins are made of very thick cow-leather, which are almost impenetrable to the semoum. In Arabia and Egypt, on the contrary, the skins of sheep or goats are used for this purpose; and I witnessed the effect of a semoum upon them, in going from Tor to Suez over land, in June 1815, when in one morning a third of the contents of a

full water-skin was evaporated. I have repeatedly been exposed to the hot wind in the Syrian and Arabian deserts, in Upper Egypt and Nubia. The hottest and most violent I ever experienced was at Suakin ; yet, even there, I felt no particular inconvenience from it, although exposed to all its fury in the open plain. For my own part, I am perfectly convinced, that all the stories which travellers or the inhabitants of the towns of Egypt and Syria relate of the semoum of the desert, are greatly exaggerated, and I never could hear of a single well-authenticated instance of its having proved mortal either to man or beast. The fact is, that the Bedouins, when questioned on the subject, often frighten the townspeople with tales of men, and even of whole caravans, having perished by the effects of the wind ; when, upon closer inquiry, made by some person whom they find not ignorant of the desert, they will state the plain truth. I never observed that the semoum blows close to the ground, as commonly supposed, but always observed the whole atmosphere appear as if in a state of combustion : the dust and sand are carried high into the air, which assumes a reddish, or bluish, or yellowish tint, according to the nature and colour of the ground from which the dust arises. The yellow, however, always, more or less, predominates. In looking through a glass of a light yellow colour, one may form a pretty correct idea of the appearance of the air, as I observed it during a stormy semoum at Esne, in Upper Egypt, in May, 1813. The semoum is not always accompanied by whirlwinds ; in its less violent degree it will blow for hours with little force, although with oppressive heat ; when the whirlwind raises the dust it then increases several degrees in heat. In the semoum at Esne, the thermometer mounted to 121° in the shade ; but the air seldom remains longer than

a quarter of an hour in that state, or longer than the whirlwind lasts. The most disagreeable effect of the semoum on man is, that it stops perspiration, dries up the palate, and produces great restlessness. I never saw any person lie down flat upon his face to escape its pernicious blast, as Bruce describes himself to have done in crossing this desert ; but, during the whirlwinds, the Arabs often hide their faces with their cloaks, and kneel down near their camels to prevent the sand or dust from hurting their eyes. Camels are always much distressed, not by the heat, but by the dust blowing into their large, prominent eyes : they turn round and endeavour to screen themselves by holding down their heads ; but this I never saw them do except in case of a whirlwind, however intense the heat of the atmosphere might be. In June, 1813, going from Esne to Siout, a violent semoum overtook me upon the plain between Farshyout and Berdys ; I was quite alone, mounted upon a light-footed hedjin. When the whirlwind arose, neither house nor tree was in sight ; and while I was endeavouring to cover my face with my handkerchief, the beast was made unruly by the quantity of dust blown into its eyes and the terrible noise of the wind, and set off at a furious gallop ; I lost the reins, and received a heavy fall, and not being able to see ten yards before me, I remained wrapped up in my cloak on the spot where I fell, until the wind abated ; when, pursuing my dromedary, I found it at a great distance, quietly standing near a low shrub, the branches of which afforded some shelter to its eyes.

" Bruce has mentioned the moving pillars of sand in this desert, but although none such occurred during my passage, I do not presume to question his veracity on this head. The Arabs told me that there are often whirlwinds of sand, and I have re-

peatedly passed through districts of moving sands, which the slightest wind can raise ; I remember to have seen columns of sand moving about like water-spouts in the desert, on the banks of the Euphrates, and have seen at Jaka terrible effects from a sudden wind ; I therefore very easily credit their occasional appearance on the Nubian desert, although I doubt of their endangering the safety of travellers."

In a subsequent part of his travels in Nubia, the same accurate observer, to whom we are under so many obligations in this account of the camel, has described the most tremendous hurricane of the desert which he ever witnessed ;—"A dark blue cloud first appeared, extending to about 25° above the horizon ; as it approached nearer and increased in height, it assumed an ash-gray colour, with a tinge of yellow, striking every person in the caravan who had not been accustomed to such phenomena, with amazement at its magnificent and terrific appearance. As the cloud approached still nearer, the yellow tinge became more general, while the horizon presented the brightest azure. At last, it burst upon us in its rapid course, and involved us in darkness and confusion : nothing could be distinguished at the distance of five or six feet ; our eyes were filled with dust ; our temporary sheds were blown down at the very first gust, and many of the more firmly fixed tents followed ; the largest withstood for a time the force of the blast, but were at last obliged to yield, and the whole camp was levelled with the ground. In the meantime, the terrified camels arose, broke the cords by which they were fastened, and endeavoured to escape from the destruction which appeared to threaten them." Some writers state, that camels, at the very first blast of the semoum, bury their noses in the sand.

Such are the dangers to which a caravan, travel-

ling through the deserts of Asia and Africa,* is exposed ; and, however splendidly appointed may be the caravans of the Hadj, they cannot escape these dangers, or materially diminish the privations of all those who pass over such dreary regions. It must be quite evident that, without the camel, the journey would be totally impossible. With this useful creature, whose value to the pilgrim is beyond all price, its difficulties are alleviated and its dangers averted ; and if men can, in any degree, emulate the camel's endurance and abstinence, as the Arabs do by constant habit, there may be hunger, and thirst, and fatigue, but exhaustion and death will be battled with, and the weak, the faint of heart, and the luxurious only will fall in the struggle.

The Egyptian pilgrims remain a day and night at the castle of Akaba ; their course then lies by the eastern shore of the Red Sea. The road by which they proceed is at first rocky and barren, but upon the third day after the caravan leaves Akaba, the travellers find wells of sweet water and date-trees in abundance ; and this agreeable contrast to the desert through which they have passed, continues for several days. The roads are, indeed, infested by robbers ; and at every halting-place there are plunderers ready to rush upon the straggler and often to destroy him. About the twentieth day of the journey the caravan again passes through a barren valley without water ; and the wells are so distant, that the march is continued for two days and a night without a halt. The town of Beder is at length reached on the twenty-ninth day, where the travellers find rest and refreshment. The route is little varied, either by diffi-

* Humboldt has calculated, from maps constructed upon a large scale, that the great desert of Africa, without including Bornou and Darfour, extends over 194,000 square leagues. The immensity of this waste will be apparent, when it is considered that the Mediterranean sea only occupies 79,800 square leagues.

culties or pleasures, for several days onward ; when the road crosses a steep sand-hill, which Burckhardt saw covered with carcasses of camels, the relics of the late Hadj caravans. The neighbouring plains are spotted with tamarisk trees, which delight in sand, and in the driest season, when all vegetation around them is withered, never lose their verdure. Beyond Kholeys, about three days' journey from Mecca, is a narrow ascending path between rocks, affording room for the passage only of one camel. The torrents which run down this defile in winter entirely destroy the road ; and the poor camels stumble with their loads over large sharp blocks of stone, which wound their feet. On the day before the pilgrims reach Mecca, they repose in a valley, covered with Saracen buildings, Arab huts, and date-groves ; and remarkable for its numerous henna-trees, with the odoriferous flowers of which, reduced to powder, the people of the East dye the palms of their hands, the soles of the feet, or the nails of both : the pilgrims always carry henna home as a present to their female relations. Near Mecca are two great reservoirs of water, one for the Egyptian, the other for the Syrian caravan : they are about six hundred years old, and were constructed by the munificence of the Turkish sultans. That appropriated to the Egyptian pilgrims is about one hundred and sixty feet square, and from thirty to thirty-five feet in depth ; it is supplied by an aqueduct. After thirty-seven days' journey from the gardens near Cairo, the Hadj enters Mecca with great solemnity. It would be beside the purpose of this work to describe the ceremonies in the birth-place of Mahomet, which may more properly find a place in an account of the manners of the East. The city presents an extraordinary spectacle of business and pleasure, of devotion and licentiousness The rich hadjys spend their wealth luxuriously ,

the mendicants display their rags and proclaim their miseries in the courts of the great mosque ; and very few exhibit any real devotion, such as was contemplated in the original institution of the pilgrimage. One remarkable scene, however, may be given from Burckhardt, (who was present during this great solemnity of the East,) the sermon at the mountain of Arafat, some distance from Mecca ; here the camel occupies a prominent station :—

"The time of Aszer (or about three o'clock, P. M.) approached, when that ceremony of the Hadj takes place, for which the whole assembly had come hither. The pilgrims now pressed forward towards the mountain of Arafat, and covered its sides from top to bottom. At the precise time of Aszer the preacher took his stand upon the platform on the mountain, and began to address the multitude. This sermon, which lasts till sunset, constitutes the holy ceremony of the Hadj, called Khotbetel Wakfe ; and no pilgrim, although he may have visited all the holy places of Mecca, is entitled to the name of hadj, unless he has been present on this occasion. As Aszer approached, therefore, all the tents were struck, everything was packed up, the caravans began to load, and the pilgrims belonging to them mounted their camels, and crowded round the mountain to be within sight of the preacher, which is sufficient, as the greater part of the multitude is necessarily too distant to hear him. The two Pashâs, with their whole cavalry drawn up in two squadrons behind them, took their post in the rear of the deep lines of camels of the hadjys, to which those of the people of the Hedjaz were also joined ; and here they waited in solemn and respectful silence the conclusion of the sermon. Further removed from the preacher was the Sherif Yahya, with his small body of soldiers, distinguished by several green

standards carried before him. The two Mahmals, or holy camels, which carry on their back the high structure that serves as the banner of their respective caravans, made way with difficulty through the ranks of camels that encircled the southern and eastern sides of the hill, opposite to the preacher, and took their station, surrounded by their guards, directly under the platform in front of him. The preacher, or khatyb, who is usually the kadhy of Mecca, was mounted upon a finely caparisoned camel, which had been led up the steps; it being traditionally said, that Mahomet was always seated when he here addressed his followers, a practice in which he was imitated by all the Khalifes who came to the hadj, and who from hence addressed their subjects in person. The Turkish gentleman of Constantinople, however, unused to camel-riding, could not keep his seat so well as the hardy Bedouin prophet; and the camel becoming unruly, he was soon obliged to alight from it. He read his sermon from a book in Arabic which he held in his hands. At intervals of every four or five minutes he paused, and stretched forth his hands to implore blessings from above; while the assembled multitudes, around and before him, waved the skirts of their ihrams (cloaks) over their heads, and rent the air with shouts of 'Lebeyk, Allahuma Lebeyk,' (i. e. 'Here we are, at thy commands, O God!') During the wavings of the ihrams, the side of the mountain, thickly-crowded as it was by the people in their white garments, had the appearance of a cataract of water; while the green umbrellas, with which several thousand hadjys, sitting on their camels below, were provided, bore some resemblance to a verdant plain."

The Bactrian Camel. Camelus Bactrianus, LINNÆUS. *Chameau*, BUFFON.

At the present time, (June 1829,) there is a camel with two humps daily led about the streets of London. This individual, a male, is a remarkably fine sample of the species. He is of a dark brown, or red colour, with shaggy hair under his throat; and altogether is of a most picturesque appearance. He is muscular, and fleshy, and seems in excellent health, walking the pavements with a stately pace, and with no appearance of being inconvenienced either by the surface or the climate. Indeed this species appears fitted by nature for a moister atmosphere than the Arabian camel, and may thus be somewhat adapted to our country. In the winter this camel is wrapped up, and has sometimes a fire in his stable, if the weather is particu-

larly cold. His height is about eight feet between the humps. He is fed principally on hay, and on corn when he travels ; his allowance of water is various, as he sometimes drinks six gallons at a draught, and often goes without it several days. He is mild in his disposition ;—and generally carries a monkey on his neck, and a boy between his humps ; but he is muzzled, to prevent the people in the streets from giving him food. His keeper states that he is nine years old, and that he was brought from Egypt. His present owner purchased him at Parma. The Bactrian camel, as we have before mentioned, is extremely rare, except in the great middle zone of Asia, to the North of Taurus, and the Himalaya mountains ; although he may travel with caravans into Egypt. Niebuhr saw only three specimens of the two-humped camel during his travels in Arabia ;*—and Mr. Mac Farlane never observed but one in Asia Minor, which came from some remote province in the south. Pallas says that very large two-humped camels are found wild in the deserts of Shamo, near the frontiers of China. The Calmucks, however, give liberty to all animals, upon a religious principle. We have no reason to believe that, although the Bactrian camel inhabits a colder and a moister climate than the Arabian, his habits are essentially different. Mr. Buckingham says that the Bactrian camels "are shorter, thicker, more muscular, covered with a dark brown shaggy hair, and heavier and stronger by far than any other ;"—but this different conformation, which is produced by, and better adapted to, the climate in which the two-humped camel is found, does not alter the character of the animal. He is still the same patient, la-

* Description de l'Arabie.

borious, and willing slave ; travelling over sandy deserts, and administering to the wants of a wandering people. We shall, therefore, conclude this account of the camel genus, by some general remarks upon the camels of the native tribes of Asia and Africa.

When travelling with the Souakin slave merchants in Nubia, Mr. Burckhardt saw the camel nearly approaching to a wild state—more wild than he had ever previously witnessed. Whole herds, left to pasture without men and dogs, were kept entirely by the natives, (Hadendoa,) for their milk and flesh, very few being employed as beasts of burden. They appeared to be frightened at the approach of men and of loaded camels, a circumstance which this traveller had never witnessed before. "In the Arabian and Syrian deserts," he continues, "the camels when grazing come running and frisking towards any strange camel which they perceive at a distance, and they easily obey even the call of strangers, pro-

vided they are Bedouins, like their own masters." The Nubian camels are generally white. Mr. Mac Farlane says that the camels of Asia Minor are almost invariably of a fawn or drab colour, and that he never there saw a white or a black camel. In Bithynia he met some huge creatures darker than the species in general, with a long, thick, black beard on the upper part of the throat. In European Turkey he was struck with the altered appearance of the camel ;—they seemed deteriorated ; and he never saw a fine one in Roumelia. The finest camels of Arabia are bred in the province of Nedjed, which is celebrated for its pastures. The Arabs call this country "the mother of camels," and resort to it from all quarters for the supply of their herds. The price of a Nedjed camel is about ten dollars.* The plain of the Hauran, supposed to be the land of Uz, is a country of camels ; and extensive herds, as in the time of Job, are the indications of wealth. The mode in which the camels are lodged in this district is one of primitive simplicity. Mr. Buckingham says, "at sunset the camels of our host entered the room in which we were seated, and ranged themselves along, to the number of eight on each side." They came to drink at stone troughs, which were of very solid masonry. Mr. Buckingham was struck with the height of the outer door, but he soon observed that it was constructed to admit the entrance of the camels.† The Ababde Bedouins, who inhabit the country lying between Nubia and the Red Sea, are known in Upper Egypt for their excellent breed of camels ; and when at war with other tribes they fight upon camels, armed with a target, lance, and sword. The Bisharye Bedouins, a more savage people, consider the raw marrow of the camel as the greatest luxury they can command. The camels of the Turk-

* Burckhardt. † Arab Tribes.

mans of Ryhanlu, to the north-westward of Aleppo, feed upon a low bramble which grows in abundance upon the hills. In the evening they descend the mountains, and come trotting to the tents, where each receives a ball of paste, made of barley-meal and water, weighing about one pound. The expense of feeding these useful animals is therefore reduced to the cost of a handful of barley a day.* Through their means the Turkmans carry on a very profitable trade with Aleppo. The Yezeedis, a people living chiefly by themselves in the mountains of Singar, who pasture their camels upon the Southern desert, feed chiefly upon their milk and sometimes upon their raw flesh ; and the hair of the camel is made into cloth for their garments and for their tents.†

There is a great similarity of manners between many of the wild Arab tribes of Asia and those of the African desert ; and this similarity has perhaps lasted from the time when these wandering people first passed beyond the Nile. Purchas, speaking of the Numidians, says, in his rough manner, "There foode is oftentimes patience with an empty belly, which when they fill, bread or meate after any sort is absent. Onely they have their camels' milk, whereof they drink a dishfull next their heart. . . . . All their life is spent in hunting, and robbing their enemies ; not staying above three or four days in a place, as long as the grasse will serve their camels." Capt. Lyon, who saw a great deal of the Arabs of Northern Africa, thus describes their migrations :— "An Arab family on its march presents a very extraordinary appearance, the camels being laden with tents, cooking utensils, women, and children. The men walk, driving their flocks before them, or ride

* Appendix to Burckhardt's Syria.
† Buckingham's Mesopotamia.

their horses, frequently without bridle or saddle. Should the journey exceed one day, a temporary tent is erected at night; and at the dawn of morning all is again placed on the camels. . . . . It frequently happens that the spot fixed on as a temporary residence is far distant from any well,—sometimes even three days of the ordinary march of flocks; yet this does not dishearten the persevering Arab, who, notwithstanding, drives his sheep once a week to drink. They feed as they go and come, and therefore do not suffer much on their long journey. The wants of the people are easily supplied: a few skins of water being brought at stated times by a camel, and economized with great care." One of the greatest solemnities of these simple tribes is that of conducting a bride to her husband. The lady is placed in a frame on the

Bridal Camel of the Arabs.

back of a camel, and is housed over with carpets, shawls, and ostrich feathers. The camel is led by a relation of the bride, preceded by dancing people, music, and mounted and dismounted Arabs, who shout and fire their guns, running backward and forward in the procession. Captain Lyon made a drawing of the bridal camel and his trappings.

The manufacture of the camel's hair into garments and tents is the only mechanical employment which gives a variety to this pastoral life of the Arabs of the African desert. The hair is pulled off the animal, and spun upon a hand spindle. When a sufficient quantity is spun, and a place of pasturage is found, the people weave the yarn in a very rude manner. The patient Hindoos weave their fine muslins with as little aid from machinery. The yarn is stretched upon a number of parallel pegs, and a long wooden needle is passed through them, in the same way that a shuttle passes, except that every other thread must be taken up by a distinct effort, instead of being adjusted by treadles. By this persevering labour, enough stuff for a tent is at last woven.*

The wandering Arabs distinguish their individual camels, in herds even of a thousand, with extraordinary facility. Their sight, too, is very keen, by constant exercise. As a sailor sees a ship looming up long before an unpractised eye can discover it, the Arab espies a camel at a distance which to an European appears incredible. The camel himself has a large eye, with a considerable range of vision. To a certain extent he can see behind him; but he cannot look upward, as the brow hangs over the orb—a wise provision of nature to shelter him from the scorching sun. It is perhaps from this construction of the eyebrow that the camel always carries his head hori-

* See Riley's Captivity.

zontally, the muzzle pointing straight to the line of the horizon.

The caravans which travel from the coasts of Egypt, Tripoli, Tunis, Algiers, and Morocco, to Timbuctoo, the great depôt of central Africa, offer the most extraordinary instance of commercial perseverance with which we are acquainted. The journey from the borders of the desert is represented to employ eighteen weeks. These caravans from the coast exchange their commodities at Timbuctoo, with caravans which arrive from regions where never European has penetrated. It is humiliating to the adventurous spirit and intelligence of more civilized countries, that the expeditions of discovery into the interior of Africa have fallen so far short of the objects which were expected to be accomplished; but still every step onward is something gained ; and the name of every new spot written upon the great blank of the map of that immense district, is a pledge that civilisation is marching onward with a sure, though slow step. The hateful commerce in slaves forms a considerable business of some of the caravans, particularly those which trade from Cairo. Several of the enterprising travellers of England have accompanied these caravans ; and they give a fearful picture of the miseries which the oppressor inflicts upon his victims ; they have wretched food, and little clothing ; they are watered once a day, like cattle, from bowls, out of which they drink kneeling ; they endure enormous fatigue; they are punished upon the lightest occasions with the severest blows. And yet even these poor creatures have a compensation—that cheerful temperament which distinguishes the African in every latitude ; and their journey terminates in the slavery of the East, so different from that of the Western hemisphere, as not to merit the same name. Of these much-injured beings, Captain Lyon thus speaks :—"Their good-humoured gayety and songs

had lightened to me many hours of pain and fatigue; and their gratitude for any little benefits I had it in my power to confer had quite warmed my heart towards them. Even when so exhausted as to be almost unable to walk, these poor creatures showed few instances of sulkiness or despondency."

Camel of the Slave-caravan being laden.

We have thus, at somewhat greater length than we can venture to give to many other species of quadrupeds, gone through the history of the camel. The subject is full of interest; and we could not, therefore, hastily dismiss an animal which forms such an important part in the economy of the human race. The horse and the elephant are perhaps the only other creatures that afford equally valuable services to man, in labouring for his benefit, and are equally connected with his history. They each are intimately associated with the progress of society in every region of the world; and they each offer the most remarkable adaptation of powers to the peculiar duties which they have to perform. Their labour may continue to be, as it has been, superseded by the inventions of machinery, and by those modes of communication which are independent of their power

either wholly or in part; but the advance of civilisation and the triumphs of art could never have been thus far accomplished, without the previous domestication of these three valuable servants; and it is doubtful whether, at any more advanced stage of human art, their services can be greatly dispensed with.

The scientific character of the species is as follows:

Teeth—Incisors, $\frac{2}{6}$. Canine, $\frac{1-1}{1-1}$. Molar, $\frac{6-6}{5-5}$.

Total, 34.

Two pointed teeth implanted in the incisive bone.
The scaphöid and cuböid of the tarsus (bones of the instep) separate.
The two toes united underneath, nearly to the extremities, by a common sole.
The upper lip cleft and swelled.
No horns.
The camels are inhabitants of the Old World, and are almost exclusively found in Asia and Africa.
The female goes with young eleven or twelve months, and produces only one at a birth.

Camel's Foot and Leg, as exhibited when the skin is removed.

Chapter XI.

THE LLAMA.

The llamas form a secondary group of camels, offering to the eye of the naturalist very small anatomical differences of construction from that of the camel, properly so called. The foot of the llama is not, like that of the camel, covered with an elastic sole which joins the two toes. From the absence of this entire sole, the species of South America is enabled to climb the precipices of the Andes, which are its native region, the toes having strong nails, each of which has a thick cushion, or pad, below The llama also wants the second canine tooth in the lower jaw ;—but this difference is not by some considered such as to require a separation of the genus—for deer, of various species, have the same deviation from the general type. Again, the absence of the hump in the llama species is not an anatomical difference which constitutes a character ;—for as the skeleton of the Bactrian camel with two humps does not differ from that of the Arabian with one, so does the arrangement of the bones of the llama agree precisely with the conformation of the camel. The zebu is an ox, although he has a hump. The ears of the llama are longer, and the tail shorter, than those of the camel. The similarities which determine the genus to which the camels and the llamas belong, are principally these :—1. Each species has very remarkable peculiarities connected with the economy of their re-production, in which they differ from all other animals. 2. The camel and the llama differ also

from every other species of the class of ruminating animals in the want of horns, and in having two large incisive teeth, on each side of the upper jaw. 3. The stomachs of the camel and the llama are, in some degree, similarly constructed. Father Feuillée has described the stomach of the llama ; and maintains that it has not only a large reservoir for carrying water, but that, like the stomach of the camel, it has the same machinery for allowing the separation of solid from liquid aliment. Sir Everard Home, however, describes this portion of the llama's stomach as only partially resembling that of the camel. He says, "The stomach has a portion of it, as it were, intended to resemble the reservoirs for water in the camel ; but these have no depth, are only superficial cells, and have no muscular apparatus to close their mouths, and allow the solid food to pass into the fourth cavity, or truly digesting stomach, without going into these cells."* But that the llama has an internal mechanism for retaining water, or secreting a liquid substance, is certain ; for on the summits of the Andes they are far above any lakes ; and it has been observed that in a state of domestication they never exhibit a desire to drink, whilst they can obtain green pasture. 4. The llama, according to Molina (*Storia Nat. del Chili*,) has a conformation resembling the camel's hump, being provided with an excess of nutritive matter, which lies in a thick bed of fat under the skin, and is absorbed as a compensation for an occasional want of food. These remarkable similarities certainly warrant naturalists in classing the camel and the llama in the same genus, although they differ both in size and form. They are each evidently fitted by nature for the endurance of great hardships and privations—the one amidst the sands

* Comparative Anatomy, vol. v. p. 249.

of the desert, under a burning sun—the other on the wastes of some of the loftiest mountains of the world, with a region of perpetual snow above them. The slight variations in their conformation, such as that of the foot, are modifications of nature which fit them for their respective localities. A habitation amongst the rocks would be mechanically impossible for the camel; whilst the burning plains would be as little suited to the llama. But each is adapted to exist in a very arid and sterile region; and their habits are created by their peculiar organization.

In the gardens of the Zoological Society, are two individuals of the llama family, which are described in the guide to the gardens, as varieties of the same species. The one, which principally attracts attention by the lightness of its make, the brilliancy of its eye, and the beautiful tawny brown colour of its coat, stands about four feet, from the sole of the foot to the withers. He was presented to the Society by Robert Barclay, Esq. This llama often exhibits the remarkable peculiarity of its species, that of spitting when it is offended;—and as it easily takes offence, even at a look, the visiters of the gardens have abundant opportunites of disproving, what has so often been asserted, that its saliva has something venomous in its quality. We have received a plentiful shower of it in the face, without feeling any of those blisters which travellers used to describe with great minuteness. This animal, too, is somewhat inclined to strike with his fore-feet; and he often raises himself upon the iron railing of his enclosure, with an appearance of a great desire to do mischief. The power of his teeth is considerable; for upon some sudden fit of rage, in the autumn of last year, he tore a large piece out of a strong door, at one effort.

The Llama—Auchenia Glama, Illiger and F. Cuvier—*Lama*, Buffon and Cuvier.

The domestication of the llama, in his native regions, has doubtless had a considerable effect in producing those differences of colour for which the species is remarkable. These variations, and some other distinctions arising not only out of the length and fineness of the wool, but also from dissimilarities of form, have led to a considerable contrariety of opinion amongst naturalists, whether individuals of this family belong to different species, or are varieties of the same. The French naturalists seem generally to agree with Buffon, in dividing the group into three species—the llama, the alpaca, and the vigonia;* but others, adopting the description of Molina, add two other species—the guanaco and the hueco. It is not the purpose of

* This division by Buffon is found in the Supplement to his works. He had previously recognised only two species.

this work to enter into any minute investigation of the particular classifications of zoologists ; and certainly not to attempt any determination of disputed points. We shall, therefore, content ourselves with mentioning those peculiarities of habit which distinguish, more or less, all the species or varieties : leaving to others to decide whether the differences of appearance, which are certainly striking enough, are the results of nature or of domestication ; and whether the diversities of the original Indian names, which are equally remarkable, are meant to indicate different animals, or are merely produced by calling the same animal by the name in which it is known in various districts, which hold little intercourse with each other.

The white llama in the Zoological Gardens, which was presented to the Society by the Duke of Bedford, differs very remarkably (as will be seen by their portraits) from the preceding specimen. He is of a larger size, and more muscular ; and his fleece is covered with much longer and coarser wool. His forehead, too, is flat, while that of the other is curved. In his disposition, he is exceedingly mild and familiar.

If we can conceive the colour to be accidental, the white llama of the Zoological Gardens has many points of resemblance with the *camelus alpaca* (the *paco* of Buffon,) which is described as brown and partly black. "He differs from the llama," says Beliardy, (Supplement de Buffon,) "in being lower on his legs, and larger in his body." There is an individual of this species, or variety, in the Jardin des Plantes, which has the same gentleness as that in the Zoological Gardens ; he is sensible to caresses, and permits his keeper to lead him about with a

White Llama

halter. The prominence of the upper lip beyond the nostrils—the large and brilliant eye—and the extremely flexible ear, sometimes pointing forward, sometimes backward—are characteristics of all the llamas. All have not callosities, properly so called, either upon the breast or the legs, as the camel has, although they kneel down in the same manner; but the brown llama at the Zoological Gardens has these callosities sufficiently marked on the knees of its fore-legs.

Llamas have been frequently brought to England within the last twenty years, and have been exhibited in the menageries. His Majesty had several at Windsor, which were allowed to range in a paddock; but they did not long endure the climate. The individual described by Buffon as the *vigogne*, was more

than a year in England, and lived for about the same time in France. It was remarkable that this animal never took any liquid whatever ; but its secretion of saliva must have been considerable, for it spat upon all who approached it. The greatest number of llamas that were ever brought to Europe, at one time, was a herd that arrived at Cadiz, in 1808. It originally consisted of thirty-six individuals, including the sorts called llamas, alpacas, and vigonias. They were brought from Lima, in Peru, and Concepcion, in Chili, to Buenos Ayres, by slow journeys of two or three leagues. They were fed on the road with potatoes, maize, and hay ; but when their supply of potatoes was exhausted they became so constipated, that it was necessary to afford them medical relief. Eleven only of the number arrived at Cadiz, of which two died there. These animals were brought to Europe as a present from Godoy (the Prince of the Peace) to the Empress Josephine; but they arrived just at the period of his disgrace, at the commencement of the Spanish revolution, and the populace, in hatred of their late minister, were about to throw the llamas into the sea. The governor of Cadiz, however, rescued them ; and they were given in charge to an eminent Spaniard, Don Francisco de Theran, who had a fine zoological garden at San Lucar de Barraméda, in Andalusia. The French armies having subsequently traversed this province, Marshal Soult took the llamas under his care ; and Monsieur Bory de Saint Vincent, a distinguished French naturalist who accompanied the army, studied their habits with great attention, and made some drawings of them, which were afterwards lost at the battle of Vittoria. He paid particular attention to the quality of their wool, and transmitted some specimens of each sort to the Academy of Sciences at Paris. It appears from the report of M.

de Saint Vincent and Don Francisco de Theran, that the fleece of the alpa-vigonia (the cross between the vigonia and the alpaca) is much longer, and six times heavier, than that of any other variety. From the opportunities which these naturalists had of observing the llamas, the fact was ascertained, which has been stated by some travellers, that the individuals of every sort had the remarkable habit of depositing their dung in one particular spot. It is this habit which betrays the herds to the hunters in the South American mountains.*

The llamas of South America furnish a beautiful example of the determination of the locality of a particular group of animals, according to the elevation of the surface, where they find their food. This selection is probably determined by temperature. The llamas are stationed upon different stages of the Cordilleras ; and are found, or disappear, throughout that enormous chain of mountains, as the summits are elevated or depressed. Thus they range considerably below the line of perpetual snow, from Chili to New Granada, without reaching the isthmus of Panàma. The species is not found in Mexico ; and this remarkable circumstance is to be ascribed to the fact that at the isthmus the Cordillera has a less elevation than is suited to their natures and wants. In the same way some of the Alpine animals of Europe, (such as the bouquetin,) which never descend into the plains, are found upon mountains at long intervals, although the line of their summits is interrupted. This locality is determined by elevation. The same fact is constantly observed with regard to plants.†

The llama was found by the Spaniards at the period of their conquest of South America. It was

* See Dictionnaire Classique d'Histoire Naturelle, tom. iii. p. 454, Paris, 1823.

† Humboldt.

the only beast of burden which the natives possessed. Its flesh was eaten by the Indians;—and its wool was woven into cloth. Augustin de Zarate, who, in 1544, held the office of Treasurer-General, in Peru, and who wrote an account of the conquest, thus describes the llama, (which he calls a sheep) as it was observed in the mountains of Chili :—

"In the places where there is no snow the natives want water; and to supply this want they fill the skins of sheep with water, and make other living sheep carry them :—for it must be remarked that these sheep of Peru are large enough to serve as beasts of burden. They resemble the camel in their shape, although they have not the hump on the back, like that animal. They can carry about a hundred pounds or more; and the Spaniards used to ride them—and they would go four or five leagues a day. When they are weary, they lie down upon the ground; and as there are no means of making them get up, either by beating or assisting them, the load must of necessity be taken off. When there is a man on one of them, if the beast is tired and is urged to go on, he turns his head round, and discharges his saliva, which has a very bad odour, into the rider's face. These animals are of great use and profit to their masters; for their wool is very good and fine, particularly of that species named *pacas*, which have very long fleeces :—and they are of little expense for nourishment, for a handful of maize suffices them, and they can go four or five days without water. Their flesh is as good as that of the fat sheep of Castile. There are now public shambles for the sale of their flesh, in all parts of Peru where the animal is found. This was not the case when the Spaniards first came—for when one Indian had killed a sheep, his neighbours came and took what they wanted—

and then another Indian killed a sheep in his turn."* This last custom is probably that of all uncivilized people, amongst whom commerce is unknown ; but it is a singular illustration of the simplicity of these poor natives, who were content to take their supply of food, whether of fruits or of flesh, without much trouble either of cultivation or traffic. In a century or two the arts of civilized life were, to a small extent, forced upon them. Capt. George Shelvocke, an Englishman, who sailed round the world in 1719-22, thus describes the llamas which he saw at Arica, in Peru :—

"For the carriage of the guana the people at Arica generally use that sort of little camels which the Indians of Peru call *llamas ;* the Chilese, *chilihneque ;* and the Spaniards, *carneros de la tierra*, or native sheep. The heads of these animals are small in proportion to their bodies, and are somewhat in shape between the head of a horse and that of a sheep, the upper lips being cleft, like that of a hare, through which they can spit to the distance of ten paces against any one who offends them ; and if the spittle happens to fall on the face of a person, it causes a red itchy spot. Their necks are long and concavely bent downwards, like that of a camel, which animal they greatly resemble, except in having no hunch on their backs, and in being much smaller. Their ordinary height is from four feet to four and a half, and their ordinary burden does not exceed an hundred weight. They walk, holding up their heads, with wonderful gravity, and at so regular a pace, as no beating can quicken. At night it is impossible to make them move with their loads, for they lie down till these are taken off, and then go to graze. Their ordinary food is a sort of

* Histoire du Peron, vol. i., p. 177. Paris, 1716.

grass, called yeho, somewhat like a small rush, but finer, and has a sharp point, with which all the mountains are covered exclusively. They eat little, and never drink, so that they are easily maintained. They have cloven feet, like sheep, and are used at the mines to carry ore to the mills; and, as soon as loaded they set off without any guide to the place where they are usually unloaded.

"They have a sort of spur above the foot, which renders them sure-footed among the rocks, as it serves as a sort of hook to hold by.* Their hair, or wool rather, is long, white, gray, and russet, in spots, and fine, but much inferior to that of the vicunna (vigonia,) and has a strong and disagreeable scent.

"The vicunna is shaped much like the llama, but much smaller and lighter, their wool being extraordinarily fine, and much valued. These animals are often hunted after the following manner:—Many Indians gather together, and drive them into some narrow pass, across which they have previously extended cords about four feet from the ground, having bits of wool or cloth hanging to them at small distances. This so frightens them that they dare not pass, and they gather together in a string, when the Indians kill them with stones tied to the ends of leather thongs. Should any guanacos happen to be among the flock, these leap over the cords, and are followed by all the vicunnas. These *guanacos* are larger and more corpulent, and are also called viscachas.

"There is yet another animal of this kind called *alpagnes* (alpacas,) having wool of extraordinary fineness; but their legs are shorter, and their snouts contracted in such a manner, as to give them some resemblance to the human countenance.

* This is fabulous.

"The Indians make several uses of these creatures; some of which carry burdens of about an hundred-weight. Their wool serves to make stuffs, cords, and sacks; their bones are used for the construction of weaver's utensils; and their dung is employed as fuel for dressing meat and warming their huts."*

The mode of killing the vigonias, described by Shelvocke, prevails in Chili and Peru at the present day. It is affirmed that eighty thousand are thus killed every year solely for their wool, and that the species does not appear to diminish.† Gregoire de Bolivar says, that in his time the llamas were so numerous, that four millions were killed every year for their flesh, and that three hundred thousand were employed at the mines of Potosi. The extraordinary multiplication of animal life in South America is familiar to every reader: the Pampas are covered with troops of wild horses, and the oxen are slaughtered by hundreds for their skins alone. In the Memoirs of General Miller, an Englishman in the service of the republic of Peru, it is stated, that wood was formerly so scarce and cattle so plentiful, that sheep were driven into the furnaces of limekilns, in order to answer the purposes of fuel; and that a decree of the king of Spain, prohibiting this barbarous custom, is still preserved in the archives of Buenos-Ayres.

This extraordinary abundance of animal food, and the equal fertility of many districts, where the finest fruits grow spontaneously and only require the trouble of being gathered, has had a marked effect in retarding the improvement of the natives of South America. They are neither a pastoral nor an agricultural people; and thus, surrounded by partial civilisation, they remain without any excitement to labour, which alone could improve

* Kerr's Collection of Voyages, vol. x. p. 462.
† Dict. Classique.

their moral and physical condition. Humboldt has beautifully described the state of primitive rudeness in which many of the tribes of South America remain—partly from their geographical position, and partly from the spontaneous bounty of their climate :—

"When we attentively examine this wild part of America, we appear to be carried back to the first ages, when the earth was peopled step by step—we seem to assist at the birth of human societies. In the Old World, we behold the pastoral life prepare a people of huntsmen for the agricultural life. In the New World, we look in vain for these progressive developements of civilisation—these moments of repose—these resting-places in the life of a people. The luxury of vegetation embarrasses the Indian in the chase. As the rivers are like arms of the sea, the depth of the water for many months prevents their fishing. Those species of ruminating animals, which constitute the riches of the people of the Old World, are wanting in the New. The bison and the musk-ox have not yet been reduced to the domestic state ; the enormous multiplication of the llama and the guanaco have not produced in the natives the habits of the pastoral life."

The following is the scientific character of the species, which is indigenous only to South America :

Teeth—Incisors, $\frac{2}{6}$. Canine, $\frac{1-1}{1-1}$. Molars, $\frac{5-5}{4-4}$.

Total 30.

The two toes separated ; the back without a hump ; without horns. The female goes with young about six months.

Giraffe, Xariffa, Camelopardalis Giraffa, LINNÆUS.
Giraffe, BUFFON.

Chapter XII.

THE GIRAFFE.

There are at present three giraffes in Europe—one in the King's Menagerie, in Windsor Great Park,—one at the Jardin des Plantes, at Paris,—the third at Venice, which arrived late in 1828 : a fourth was sent to Constantinople, but died there. These animals were all presents from the Pasha of Egypt. Till the year 1827, when a giraffe arrived in England, and another in France, the animal had not been seen in Europe since the end of the fifteenth century, when the Soldan of Egypt sent one to Lorenzo di Medici. This individual was represented in the frescoes at Poggio Acajano,* near Florence, in which city it was very familiar with the inhabitants, living on the fruits of the country, particularly apples, and stretching up its long neck to the first floors of the houses, to implore a meal.† There was a giraffe at Rome, at the period of Julius Cæsar's dictatorship, which appears to have been the first seen in Europe ; the Roman emperors afterwards exhibited them in the games of the Circus, or in their triumphal processions : Gordian III. had ten living giraffes at one time. The absence of the giraffe from Europe, for three centuries and a half, naturally induced a belief that the descriptions of this animal were in great part fabulous—that a creature of such extraordinary height and apparent disproportions was not to be found amongst the actual works

* Poggio Acajano is a villa belonging to the Grand Duke of Tuscany, between Florence and Prato.

† Geoffroy St. Hilaire

of nature ; and that it more properly belonged to the group of chimeras with which the regions of imagination are tenanted,—the unicorns, and sphinxes, and satyrs, and cynocephali, of ancient poets and naturalists.

The old travellers often mentioned the camelopard in the terms of exaggeration which they naturally derived from the reports of Africans. It was "a beast not often seen, yet very tame, and of a strange composition, mixed of a libard (leopard,) harte, buffe, and camel ; and by reason of his long legs before, and shorter behind, not able to graze without difficulty."* Again, he was "so huge, that a man on horseback may passe uprighte under him, feeding on leaves from the tops of trees, and formed like a camel."† In a very curious Spanish book, however, which describes an embassy from Henry III. of Castile, to Tamerlane the Great, in 1403, (being the second sent to Tamerlane by the King of Castile,) there is a minute, and in many respects accurate account of the giraffe :—

"The ambassadors sent by the King of Castile, Henri III., to the Great Tamerlane, arrived at a town called Hoy, now Khoy, on the confines of Armenia, where the Persian empire commences. At that town they fell in with an ambassador, whom the Sultan of Babylon had sent to Tamerlane. He had with him as many as twenty horsemen, and fifteen camels, laden with presents, which the Sultan sent to Tamerlane. Besides these, there were six ostriches, and an animal called *jornufa* (giraffe,) which animal was formed in the following manner :—In body it was of the size of a horse, with the neck very long, and the fore-legs much taller than the hinder ones : the hoof was cloven, like that of the ox. From the hoof of the fore-leg to the top of the shoulder it was sixteen

* Purchas, book vi., chap. 1.
† Ibid., book vii., chap. 6.

hands (palmos ;) and from the shoulders to the head sixteen hands more ; and when it raised its neck, it lifted its head so high, as to be a wonder to all. The neck was thin, like that of the stag ; and so great was the disproportion of the length of the hinder legs to that of the fore-legs, that one who was not acquainted with it would think it was sitting, although it was standing. It had the haunches slanting, like the buffalo, and a white belly. The skin was of a golden hue, and marked with large round white spots. In the lower part of the face it resembled the deer : on the forehead it had a high and pointed prominence ; very large and round eyes ; and the ears like those of a horse : near the ears, two small round horns, the greater part covered with hair, resembling the horns of deer on their first appearance. Such was the length of the neck, and the animal raised its head so high when he chose, that he could eat with facility from the top of a lofty wall ; and from the top of a high tree it could reach to eat the leaves, of which it devoured great quantities. So that altogether it was a marvellous sight to one who had never seen such an animal before." *

Buffon, and other zoologists, fell into the common error of describing the giraffe as having his fore-legs twice as long as his hind. It was not till within the last forty years that we obtained any very precise notions of the form and habits of the giraffe ; and we principally owe them to Le Vaillant, whose narrative was, indeed, originally considered, in some degree, fabulous, but the correctness of whose statements, in this particular, has since been abundantly confirmed. The first encounter of this naturalist with the giraffe is described in such a picturesque manner, that our readers may be pleased with a

* Historia del Grand Tamerlan, &c. Madrid, 1782.

translation of the passage; he was travelling in Great Namaqua-land :—

"I was now struck by a sort of distinction which I perceived on one of the huts; it was entirely covered with the skin of a giraffe. I had never seen this quadruped, the tallest of all those upon the earth; I knew it only from false descriptions and designs, and thus I could scarcely recognise its robe. And yet this *was* the skin of the giraffe. I was in the country which this creature inhabits; I might probably see some living ones: I looked forward to the moment when I should be thus recompensed, at least in part, for all the sufferings and annoyances of my expedition."*

And this enthusiasm was not unnatural in M. Le Vaillant. It was a distinction for an European to behold with his own eyes an animal, of whose existence men had begun to doubt. Our own countryman, Burchell, has expressed the same feelings :—

"Those who have acquired a taste for zoological information, will readily comprehend in what manner the foot-marks of an animal could be interesting, or afford any particular gratification, such as I experienced in this day's journey, when they are told, that we now first distinguished the track of the tallest of all the quadrupeds in the world; of one which, from the time of the Romans until the middle of the last century, was so little known to the nations of Europe, as to have been at length considered by most people as a fabulous creature, one not existing on the globe. No person who has read even the popular books of natural history could, I think, behold for the first time the ground over which he is walking imprinted with the recent footsteps of a *camelopardalis*, without feeling some strange and

* Second Voyage en Afrique, tom ii., p. 48, 4to. Paris.

peculiar interest at the sight. The animal itself was not observed, but our attention was now awakened by the expectation of soon getting a full view of this extraordinary creature ; and the hope of being the first of the party to see it, kept all my men on the look-out the whole day."*

We return to Le Vaillant :

"One of the Namaquas, who were my guides, came in great haste to give me information which he thought would be agreeable to me. He had seen the strong feeling of pleasure which I had evinced at the sight of the skin of the giraffe ;—and he had run to say that he had just found in the neighbourhood one of these animals, under a mimosa, the leaves of which he was browsing upon. In an instant, full of joy, I leaped upon my horse ;—I made Bernfry (one of his men) mount another, and followed by my dogs, I flew towards the mimosa. The giraffe was no longer there. We saw her cross the plain towards the west, and we hastened to overtake her. She was proceeding at a smart trot, but did not appear to be at all hurried. We galloped after her and occasionally fired our muskets ; but she insensibly gained so much upon us, that, after having pursued her for three hours, we were forced to stop, because our horses were quite out of breath, and we entirely lost sight of her. . . . . The pursuit had led us far away from each other, and from the camp ; and the giraffe having made many turns and doubles, I was unable to direct my course towards home. It was noon. I already began to feel hunger and thirst; and I found myself alone in a sterile and arid spot, exposed to a burning sun, without the least shelter from the heat, and destitute of food." The traveller, however, shot and cooked some birds of the partridge genus; and

* Travels in Southern Africa, vol. ii., p. 248.

was fortunate to rejoin his companions in the evening. "The next morning my whole caravan joined me again. I saw five other giraffes, to which I gave chase; but they employed so many stratagems to escape, that, after having pursued them the whole day, we entirely lost them as the night came on. I was in despair at this ill success. . . . . The next day, the 10th of November, was the happiest of my life. By sunrise I was in pursuit of game, in the hope to obtain some provisions for my men. After several hours' fatigue, we descried, at the turn of a hill, seven giraffes, which my pack instantly pursued. Six of them went off together; but the seventh, cut off by my dogs, took another way. Bernfry was walking by the side of his horse, but in the twinkling of an eye he was in the saddle, and pursued the six. For myself, I followed the single one at full speed; but, in spite of the efforts of my horse, she got so much ahead of me, that, in turning a little hill, I lost sight of her altogether, and I gave up the pursuit. My dogs, however, were not so easily exhausted. They were soon so close upon her that she was obliged to stop to defend herself. From the place where I was I heard them give tongue with all their might; and, as their voices appeared all to come from the same spot, I conjectured that they had got the animal in a corner, and I again pushed forward. I had scarcely got round the hill, when I perceived her surrounded by the dogs, and endeavouring to drive them away by heavy kicks. In a moment I was on my feet, and a shot from my carbine brought her to the earth. Enchanted with my victory, I returned to call my people about me, that they might assist in skinning and cutting up the animal. Whilst I was looking for them, I saw Klaas Baster (another of his men,) who kept making

signals which I could not comprehend. At length I went the way he pointed, and, to my surprise, saw a giraffe standing under a large ebony tree, assailed by my dogs. It was the animal I had shot, who had staggered to this place ; and it fell dead at the moment I was about to take a second shot.

" Who could have believed that a conquest like this would have excited me to a transport almost approaching to madness ! Pains, fatigues, cruel privation, uncertainty as to the future, disgust sometimes as to the past—all these recollections and feelings fled at the sight of this new prey. I could not satisfy my desire to contemplate it. I measured its enormous height. I looked from the animal to the instrument which had destroyed it. I called and recalled my people about me. Although we had combated together the largest and the most dangerous animals, it was I alone who had killed the giraffe. I was now able to add to the riches of natural history : I was now able to destroy the romance which attached to this animal, and to establish a truth. My people congratulated me on my triumph. Bernfry alone was absent ; but he came at last, walking at a slow pace, and holding his horse by the bridle. He had fallen from his seat, and injured his shoulder. I heard not what he said to me. I saw not that he wanted assistance ; I spoke to him only of my victory. He showed me his shoulder ; I showed him my giraffe. I was intoxicated, and I should not have thought even of my own wounds." *

We shall be enabled to describe the appearance and the habits of the giraffe somewhat minutely, as they have been observed in the menageries of the kings of England and of France. But Le Vaillant

* Second Voyage, tom. ii. p. 54.

saw the animal in its natural state; and we may, therefore, properly translate a part of his description.

"The giraffe ruminates, as every animal does that possesses, at the same time, horns and cloven feet. It grazes also in the same way; but not often, because the country which it inhabits has little pasturage. Its ordinary food is the leaf of a sort of mimosa, called by the natives *kanaap*, and by the colonists, *kameel-doorn*. This tree being only found in the country of the Namaquas, may probably afford a reason why the giraffe is there fixed, and why he is not seen in those regions of Southern Africa where the tree does not grow.

"Doubtless, the most beautiful part of his body is the head. The mouth is small; the eyes are brilliant, and full. Between the eyes, and above the nose, is a swelling, very prominent and well defined. This prominence is not a fleshy excrescence, but an enlargement of the bony substance; and it seems to be similar to the two little lumps, or protuberances, with which the top of his head is armed, and which, being about the size of a hen's egg, spring, on each side, at the commencement of the mane. His tongue is rough, and terminates in a point. The two jaws have, on each side, six molar teeth; but the lower jaw has, beyond these, eight incisive teeth, while the upper jaw has none.

"The hoofs, which are cleft, and have no nails, resemble those of the ox. We may remark, at first sight, that those of the fore-feet are larger than those of the hind. The leg is very slender, but the knees have a prominence, because the animal kneels when he lies down. There is also a larger callosity on the breast, which would lead one to conclude that he generally rests on that part.*

* See p. 350.

"If I had not myself killed the giraffe, I should have believed, as have many naturalists, that the fore-legs are much longer than the hind. This is an error; for the legs have, in general, the proportion of those of other quadrupeds. I say in general, because in this genus there are varieties, as there are in animals of the same species. Thus, for example, mares are lower before than stallions of an equal height. What has led to this error, as to the difference between the legs of the giraffe, is the height of the withers, which, according to the animal's age, may exceed the height of the rump by sixteen or twenty inches, and which disproportion, when we see it at a distance, must have led to the belief that its legs are longer before than behind. . . . . His defence, as that of the horse and other hoofed animals, consists in kicks; and his hinder limbs are so light, and his blows so rapid, that the eye cannot follow them. They are sufficient for his defence against the lion. He never employs his horns in resisting any attack. . . . . The giraffes, male and female, resemble each other in their exterior, in their youth. Their obtuse horns are then terminated by a knot of long hair: the female preserves this peculiarity sometime, but the male loses it at the age of three years. The hide, which is at first of a light red, becomes of a deeper colour as the animal advances in age, and is at length of a yellow brown in the female, and of a brown approaching to black in the male. By this difference of colour the male may be distinguished from the female at a distance. The skin varies in both sexes, as to the distribution and form of the spots. The female is not so high as the male, and the prominence of the front is not so marked. She has four teats. According to the account of the natives, she goes with young about twelve months, and has one at a birth."

The giraffe in the King's menagerie at Windsor is now about four years old. It arrived in England in August 1827, and was a present from the Pasha of Egypt to his Majesty. About the same period another giraffe arrived at Marseilles, being also a present from the Pasha of Egypt to the King of France. That animal was conveyed to the Jardin des Plantes, and for several months occupied almost the exclusive attention of the lively Parisians. Every fashion was *à la giraffe ;* and even the ladies wore dresses, and the men carried handkerchiefs, bearing the portrait of the animal. Both of these individuals are females ; and they were each taken very young by some Arabs, who fed them with milk. The governor of Sennaar, a large town of Nubia, obtained them from the Arabs, and forwarded them to the Pasha of Egypt. This ruler determined on presenting them to the Kings of England and France ; and as there was some difference in size, the consuls of each nation drew lots for them. The shortest and weakest fell to the lot of England. The giraffe destined for our sovereign was conveyed to Malta, under the charge of two Arabs, and was from thence forwarded to London in the Penelope merchant vessel, and arrived on the 11th of August. The animal was conveyed to Windsor, two days after, in a spacious caravan. The following were its dimensions, as measured shortly after its arrival at Windsor :—

	Ft.	In.
From the top of the head to the bottom of the hoof	10	8
Length of the head	1	9
From the top of the head to the neck root	4	0
,, ,, neck root to the elbow	2	3
,, ,, elbow to the upper part of the knee	1	8
,, ,, upper part of the knee to the fetlock joint	1	11
,, ,, fetlock joint to the bottom of the hoof	0	10
Length of the back	3	1

	Ft.	In.
From the croup to the bottom of the hoof	5	8
,, ,, hock to the bottom of the hoof	2	9
Length of the hoofs	0	7½

From the period of its arrival at the menagerie in Windsor Great Park to the present time (June 1829,) the animal has grown eighteen inches. She can now reach about thirteen feet. Her usual food is barley, oats, beans (which are split,) and ash-leaves. She drinks milk. Her health is not good. Her joints appear to *shoot over*, and she is very weak and crippled, affording little probability that she will recover her strength. She is occasionally led for exercise round her paddock, when she seems well enough ; but now, in the day, she is seldom on her legs. Indeed, so great is the weakness of her fore-legs, that a pulley has been constructed, being suspended from the ceiling of her hovel, and fastened round her body, for the purpose of raising her on her legs without any exertion on her part. When she first arrived, she was exceedingly playful, and perfectly harmless ; but she is now much less active, although as gentle as before. She appears to know her keeper, and every object by which she is surrounded attracts her attention.

Sir Everard Home, whose notice of everything rare or curious in the animal world would naturally be excited by the presence of the giraffe, has published a very interesting memoir upon its tongue, which was originally read to the Royal Society, and now appears in the fifth volume of his Comparative Anatomy. We shall select some passages ; and shall further avail ourselves of his kind indulgence to copy two plates with which the memoir is illustrated.

"The tongue is to be considered as a congeries of muscles acting upon one another, and in this respect differing from muscles applied to bones and

other solid substances ; but that of the xariffa has so many peculiarities, as, in my opinion, give it a claim to be considered separately from the tongues of other animals, and viewed as a construction, in which a greater variety of actions are displayed than are to be met with in others. It not only performs the office of the organ of taste, but has besides nearly all the powers of the proboscis of the elephant, although not possessed of the same strength. They differ, indeed, in one being an elongation of the organ of smell,—the other of the organ of taste. The proboscis is restrained from elongation in extent beyond one inch, by means of the cartilaginous tubes it contains ; but the xariffa's tongue, which, when extended after death, is seventeen inches long, can, in the living body, be so diminished in size as to be enclosed within the animal's mouth. For this alteration in bulk some peculiar mechanism is required, since we know from experiments recorded in the Philosophical Transactions, that a muscle, whether contracted or relaxed, occupies exactly the same space. The chameleon, it is true, has a power of darting the point of its tongue to the extent of twelve inches, and catching a fly at that distance ; but there is a conical bone in the middle of a muscular tube, both to give direction, and by its form, when the circular fibres press upon it, making them slide forward.

"In the absence of an opportunity of examining the internal structure of the xariffa's tongue after death, I was led to the opinion that the change of size is effected by the organ containing a reservoir out of the course of the circulation, which can be filled with blood at the will of the animal, so as to give it rigidity, and enable it to extend itself for the performance of the different actions in which it is employed, with the smallest possible degree of

muscular exertion. It occurred to me at the same time, that whatever construction may be the means by which the xariffa's tongue is able to apply itself to such various purposes, whether that which appeared to me probable, or any other, something similar would be met with in other animals, particularly in the tongue of the deer, which, after death, readily admits of being drawn out to the extent of eight inches, although when immersed in rectified spirits it contracts to five inches.

"For the purpose of such an examination, a deer's tongue, recently after the animal's death, was injected with minute red injection, so as to distend the arteries, and show the course of the circulation in them to the greatest advantage. This tongue was afterwards divided longitudinally in a perpendicular direction, also in a horizontal one, to show the muscles of which it is composed, as well as the other parts that it contained. From this examination, the structure of the tongue of quadrupeds in general is as follows :—

"It is longitudinally divided into two equal portions by a middle line ; the muscular structure occupies the whole of the interior substance, receiving a large supply of nerves and blood-vessels from a lateral nerve and artery that pass along the outer edge ; these are imbedded in a very loose cellular tissue, the texture of which admits of the blood-vessels being distended to a very great degree, so as to enlarge the volume of the tongue : and beyond this tissue, surrounding and forming a case for the whole of the upper and lateral part of the organ, is a strong, very elastic covering of some thickness, which yields when the muscles and the trunks of the arteries are distended with blood, so as to give both extent and rigidity to the organ, and admits of the different actions in which it is employed.

"There can be no doubt of the structure of the xariffa's tongue being the same ; its actions depending upon the combined powers of muscular contraction and elasticity ; its increase and diminution of size arising from the blood-vessels being at one time loaded with blood, at another empty.

"It is deserving of observation, that these peculiarities, found in the tongue of the xariffa for its elongation, are not extended to the camel and dromedary. These animals have a provision of another kind, enabling them to inhabit the sandy desert ; this is, a reservoir connected with the stomach, in which they carry a supply of water, and which is probably wanting in the xariffa, or of a smaller size ; and in lieu of it, this animal has a power at all times of feeding on plants that are alive and full of moisture, and therefore can subsist without drinking. As the sandy desert is deficient in trees, we have a proof of its not being the xariffa's native soil, and find that, instead of the padded hoofs, whose cushion is fitted for travelling in the sand, it has two toes separated from each other, which are defended by a strong horny covering, enabling it to climb the higher rocky ground without stumbling. That it may have every facility in obtaining the branches and leaves of trees—its natural food, its neck is of a greater length than that of any animal of the same size, and is composed of only seven bones, exactly the same number that is met with in the human skeleton : this is evidently adapted for its reaching its food, and the smaller number of joints allows it to be kept erect at the smallest expense of muscular exertion. The tongue is everywhere smooth and slightly adhesive ; it has spots upon it, but these are not raised above the surface. The application of this organ to the leaves, before they are carried into the mouth, enables the animal to reject those

of noxious plants, only selecting such as have an agreeable taste.". . . . . .

"The tree which is said to be its favourite food is an acacia, and now distinguished from the rest of the tribe by the trivial name, acacia xariffiana. I have tasted it both boiled and in a natural state ; it has a pleasant flavour, and the twigs are succulent. As the tongue, in procuring and tasting its food, is much exposed to the sun's rays, it is furnished with a black rete mucosum, to prevent its being blistered.

"The mode in which it lays hold of the succulent branches of trees, and many of its other motions, are shown in the annexed sketch, from the pencil of Mr. Agasse.

"In comparing the quantity of moisture in common grass on which sheep feed, with that of the

twigs and leaves of the acacia lophantha, which nearly resembles the acacia xariffiana, it is as follows: one ounce of the leaves and twigs in drying lost three fourths; one ounce of common grass, or twenty-four scruples, lost ten, less than half by two scruples. When sheep are fed on hay, they are allowed four pounds a day and two pounds of water, which is a smaller quantity of fluid than is contained in the succulent food of the xariffa; so that this animal cannot require any drink for the purpose of digesting its food."

Mr. Richard Davis, (animal painter to the king,) who executed several portraits of the giraffe for his Majesty, communicated some interesting particulars regarding the animal to the Literary Gazette.* We transcribe them, as they are the results of accurate observation, for which Mr. Davis had ample opportunity, during the time he was employed in painting the portraits to which we have alluded :—

"In its natural habits I cannot conclude that the giraffe is a timid animal, for, when led out by its keepers, the objects which caught its attention did not create the least alarm, but it evinced an ardent desire to approach whatever it saw: no animal was bold enough to stand and suffer the giraffe to come near it. Its docile, gentle disposition leads it to be friendly and even playful with such as are confined with it; a noise will rouse its attention but not excite fear.

"I doubt whether the giraffe does amble, as asserted by Mr. Geoffroy St. Hilaire. Its walk is fast, from the length of limbs, but extremely awkward; its gallop is a succession of jumps, and I see no reason why this pace should not continue long, if

* Mr. Davis, and Mr. C. Landseer, have furnished most of the portraits for this work.

we judge by analogy with the form of some horses and dogs that have narrow stomachs ; there may be a sufficient space for the play of lungs in depth, if not in breadth. When I say the walk is awkward, perhaps this specimen is hardly a fair one from which to form such an opinion generally ; for its growth has been very rapid, and its limbs are deformed by the treatment it experienced when in the hands of the Arabs, in its overland journey from Senaar to Cairo. It was occasionally confined on the back of a camel ; and when they huddled it together for that purpose, they were not nice in the choice of cords, nor the mode of applying them : it bears the marks of what it must have suffered in this way.

" The motions of the head and neck are extremely graceful and curious, possessing the flexibility and usefulness of the neck of the swan and peacock. . . . . Its eye is large, prominent, and exceedingly quick in catching objects at a great distance ; it is well defended by the brow, and it can see, without turning the head, behind and below it. The ears are well formed to receive sounds ; and are constantly bent forward. The tongue has very peculiar properties, and can be so tapered as to enter the ring of a very small key. Its taste and smell are acute and very delicate, especially as regards the artificial food now given it ; it can raise the little papillæ at pleasure, for at times the tongue is perfectly smooth and soft, at others exceedingly rough. It is a small feeder, but drinks about eight or ten quarts of milk in the day. The upper lip is longer than the lower one, which assists the tongue in drawing in boughs ; but when grinding its food it is contracted. It has no teeth of nippers in the upper jaw, and the two outside ones are divided to the socket ; it lies down when it chews the cud.

"I do not think it very choice of its food when out, so that it be green and sweet. It is fond of aromatics; the wood of the bough it also eats; our acacia, and others of the mimosa tribe, it does not prefer; and it never attempted to graze: it seemed a painful and unnatural action when it endeavoured to reach the ground. I have seen it try to do so when excited by an object which curiosity led it to examine: its feet were then two yards apart. It was constantly in motion when the doors of its hovel were open; but it has no sense of stepping over any obstruction however low.

"It is asserted by travellers that it resembles the camel in having callosities on the breast and thighs; and that it lies on its belly like that animal. There are between the fore-legs what, to the casual observer, may appear to be such; but these are folds of loose skin, which enable it to separate its fore-legs when

Giraffe preparing to lie down.

reaching downwards. Its mode of resting is, like most quadrupeds, on its side ; but the operation of lying down is curious and peculiar : I will endeavour to describe it.

" We will suppose it to be preparing to lie on the off-side : the first action is, to drop on the fetlock of the off fore-leg, then on the knee of the near one, to bring down the other knee : it then collects its hind-legs to perform the next movement, the near one being brought rather forward but wide, until the off hind-leg is advanced between the fore ones ; this requires sometime to accomplish, during which it is poised with the weight of its head and neck, until it feels that its legs are quite clear and well arranged : it then throws itself on its side, and is at ease. When it sleeps, it bends the neck back, and rests the head on the hind quarter."

The differences between individuals of the same species of animal—to say nothing of varieties—have ordinarily produced considerable contradiction in the statements of the most accurate observers. Thus Mr. Davis, who regarded the giraffe as one accustomed to the movements of animals, differs from M. Geoffroy St. Hilaire with regard to the pace of the giraffe. Again, M. Acerbi, who saw both the giraffes of England and France at Alexandria, as well as two others, differs from Mr. Davis as to the difficulty which the animal may feel in reaching to the ground. In a published letter,* he says, " there are few naturalists who have not contributed to perpetuate the vulgar error, that ' in eating and drinking from the ground, the giraffe is compelled to stretch his fore-legs *amazingly* forwards.' Some even assert, that ' he is obliged to kneel down.' Of the four animals which fell under my examination, three took their food from the ground with compara-

* See the Athenæum, Feb. 18, 1829.

tive facility ; and one of them was scarcely under the necessity of moving its fore-legs at all. . . . . I should infer that every giraffe, in a natural state, is enabled to eat or drink from the ground without inconvenience ; and that, where any difficulty exists in this respect, it is the effect of habit, acquired in the progress of domestication."

These contradictions, in minute points, are sometimes startling ; but it is to be remembered that even the same animal is to be seen in different circumstances. Sir Everard Home fancied that the giraffe preferred licking the hand of a lady to that of a man : Mr. Davis tells us he never saw any such exhibition of politeness. In one point all the observers of the European giraffes agree—that they never make any noise whatever. Further, they appear to consider that the animal would be useless to man in a state of domestication. M. Acerbi has an anecdote illustrative of this point :—

" When at Alexandria, I had one day ordered the two giraffes (a male and female) taken at Darfûr, to be led up and down the square in front of my house : among the crowd collected on the occasion were some Bedouins of the Desert. On inquiring of one of them whether he had ever seen similar animals before —he replied that he had not ; and I then asked him in Arabic, 'Taïb di? Do they please you?' To which he rejoined, 'Mustaib,' or, 'I do not like them.' Having desired my interpreter to inquire the motives of his disapproval, he answered, 'that it did not carry like a horse, it did not serve for field labours like an ox, did not yield hair like a camel, nor flesh and milk like a goat ; and on this account it was not to his liking.' "

After all, it is a narrow view of the economy of Providence, and perhaps a selfish one, to limit our notions of the use of any being in the wide field of creation, by a reference to its ability to furnish bene-

fits to ourselves. That they all advance some wise purpose in the arrangement of the world is evident, from the care which has been observed to provide every species with the means for its preservation. Those which are weak, and liable to be destroyed by numberless enemies, have an extraordinary fecundity; —those which are powerful and dangerous, multiply very slowly; and, though their existence depends upon precarious supplies, they have wonderful powers of availing themselves of the food destined to their peculiar natures;—those which are gregarious have in their combinations an adequate protection against the ordinary attacks of the fiercer beasts;—and those which are few in number, such as the giraffe, have the means of obtaining food in a peculiar manner; live in solitary districts, where the want of pasture neither brings the herd nor their destroyers; and have great quickness of sight and hearing, and the ability of rapid flight. Amongst the peculiarities by which the giraffe is enabled to secure his race from the attacks of the stronger, is the construction of his eye, by which he can see his enemy on every side.

Back part of the Giraffe's Head.

The *teeth* of the Giraffe are, in number and arrangement, as follows :—

Incisors, $\frac{0}{8}$, Canine, $\frac{0-0}{0-0}$, Molar, $\frac{6-6}{6-6}$.

Total, 32.

Chapter XIII.

ANTELOPES.

The Giraffe is classed amongst naturalists in the same great division with the Deer and the Antelope. Each of these genera are described as ruminants, having either permanent horns on their heads, or bony substances, which fall off and are renewed.

1. The first tribe, the deer, has bony substances, generally branched, which fall off annually, and are annually renewed, of a larger size than the preceding year, always existing on the head of the male, and sometimes on the head of the female.

2. The giraffe forms the second tribe, which is distinguished by having horns, or prominences, on the frontal bone, covered with a soft skin, which is a continuation of the skin of the head. These horns exist in both sexes, and are permanent.

3. The third tribe, the antelope, is marked by the prominences of the frontal bone being covered with a sheath of horn, composed of hardened fibres, which grows in layers, and increases during the whole life.

We thus see that the antlers of the deer are formed of bone, and annually fall off and are renewed ; that the prominences of the giraffe are covered over with the skin of the forehead ; and that the horns of the antelopes are hard sheaths, which are permanent, and increase in size every year.

Buffon considered that the age of an antelope was indicated by the number of rings on his horn. This was an error ; for Pallas has shown, that although there is a real augmentation of the number of rings

as the animal advances in age, yet as the horns increase less and less as the animal becomes older, there is no equal relation between the progress of life and the growth of the horn.

With the exception of four species, *A. Gazella*, *A caama*, *A. oryx*, and *A. Cucophœa*, the females of the antelope tribe have no horns.

The antelopes, as well as the other ruminating animals with permanent horns, are found in the Old World, and in parts of the New: but their species are never mixed together; they remain within limits which they appear never to have passed. The facts connected with the locality of the antelope are very remarkable. The several species appear not only never to mix, but to receive no modifications from climate. Those species which are most separated in their geographical position are not those which differ the most; for the dissimilarities are greatest and most numerous between the species of the same country—such as in the vast herds of antelopes in Southern Africa. The influence of a common climate would rather efface than perpetuate those specific differences, if they had been originally an accidental result of varieties of temperature. The races, too, are singularly indisposed to cross; for the species which appear the most similar bear towards each other, according to the observation of Pallas, the greatest antipathy. It is still more singular that even in the same country, the cantonments (if we may so express it) of each species are invariably determined. Delalande has stated, that, in the South of Africa, those antelopes which inhabit the plains never enter the forests, and that those of the forests never seek either the plains or the marshes: every site retains the species peculiar to it. It would appear from these facts, that the particular districts of a continent have not been stocked with antelopes by emi-

gration, but by local creation ; and this is a theory which offers one of the many arguments to show the superintending care of Providence, originally to place each creature in the station most fitted for it. The antelopes, in these particulars, present an insurmountable difficulty to those naturalists who have endeavoured to refer specific differences to accidental causes ; and who, properly perceiving the modifications which climate, domestication, and other external circumstances have produced upon various races of quadrupeds, have attempted, most unphilosophically, to extend these circumstances beyond their proper limits.

Almost all the tribe of antelopes are of a gentle and social nature. In general, with the exception of many of the smaller species of Southern Africa, they live in large herds. Their sight, their hearing, and their smell, are of extreme delicacy. From the proportion of the volume of the auditory cavity, which determines the power of the sense of hearing, the ear of the antelope has a greater quickness than that of any other ruminating animal. The nylghau, the gnu, and the chamois, are exceptions to this superiority, as regards the developement of the auditory cavity ; and this may arise from the former inhabiting plains, where they are more exposed to danger, and the latter living in places less accessible by their enemies.

The name of antelope, although it appears of Greek origin, was not used by the ancients. In a work attributed to Eustathius,* who lived in the time of Constantine, the name of *anthelopes* is applied to an animal with long horns, jagged like a saw.† Many writers of the middle ages have applied to the same animal the designations of *anthelopes*, *antaplos*, and

* Not the commentator on Homer. † Cuvier.

aptalos. It is conjectured that this animal was the oryx, a species of antelope, which, according to a fabulous notion, had only one horn. *Panthalops*, in the old language of Egypt, was the unicorn. It is supposed by comparative anatomists that the rhinoceros was the unicorn of Scripture. The existence of a ruminating, cleft-footed animal with one horn has been said, by Camper, to be an impossibility; the frontal bone being originally divided in two, a horn, according to him, could not have grown in the centre of the division. Cuvier has shown how the idea of the unicorn might have arisen; that is, from the coarse figures traced by savages on rocks:—"Ignorant of perspective, and wishing to present in profile the horned antelope, they could only give it one horn, and thus originated the oryx. The oryx of the Egyptian monuments are most probably but the productions of a similarly crude style, which the religion of the country imposed on the artist. Many of the profiles of quadrupeds have only one leg before and one behind: why, then, should they show two horns? It is possible that individual animals might be taken in the chase, whom accident had despoiled of one horn, as it often happens to chamois and the Scythian antelope (*saiga*;) and that would suffice to confirm the error which these pictures originally produced. It is thus, probably, that we find anew the unicorn in the mountains of Thibet."*

The most elegant of antelopes is the gazelle. The individual here represented was in the King's menageries at Windsor, in 1827. It is since dead. Its height was twenty inches, and its length from head to tail twenty-two inches. Its skin was beautifully sleek, its body extremely graceful, its head peculiarly light, its ears highly flexible, its eyes most brilliant

* Revolutions on the Surface of the Globe. Eng. Trans. 1829.

The Gazelle, Antilope Dorcas—BUFFON.

and glancing, and its legs as slender as a reed. The Arabian poets have applied their choicest epithets to the beauty of the gazelle, and their descriptions have been adopted into our own poetry. Byron has adopted the image in speaking of the dark eyes of an Eastern beauty :

"Go look on those of the Gazelle."

When the Arabian describes his mistress, she is "an antelope in beauty"—"his gazelle employs all his soul;" and thus, in their figurative language, perfect beauty and gazelle beauty are synonymous.

These animals are spread, in innumerable herds, from Arabia to the river Senegal, in Africa. Lions and panthers feed upon them ; and man chases them with the dog, the ounce, and the falcon.

Antilope Pygarga, Pallas.

The beautiful animal, of which the above is a representation, was exhibited at Exeter-Change, in 1828. It was called, by its keepers, the *Lyre Antelope*, but many of the gazelles have their horns in the form from which this name was given. The rings upon the horns, which are very decided, form a marked characteristic of this species. It was considerably larger than the gazelle, being about three feet high. The *Pygarga*, to which species we have reason to think this individual antelope belonged, inhabits Southern Africa, and parts of Asia.

The *Springbok* (the *Antilope euchore* of Burchell)

is well known to the colonists at the Cape. "It is easily distinguished," says Burchell, "from all the known species, by the very long white hair along the middle of the back, which lying flat, is nearly concealed by the fur on each side, and is expanded only when it takes those extraordinary leaps which first suggested its name." Mr. Burchell's description of a herd of springboks is very picturesque :

"At this high level we entered upon a very extensive, open plain, abounding to an incredible degree in wild animals ; among which were several large herds of quakkas, and many *wilde-beests* or *gnues :* but the *springbucks* were far the most numerous, and, like flocks of sheep, completely covered several parts of the plain. Their uncertain movements rendered it impossible to estimate their number, but, I believe, if I were to guess it at two thousand, I should still be within the truth. This is one of the most beautiful of the antelopes of Southern Africa ; and it is certainly one of the most numerous. The plain afforded no other object to fix the attention ; and even if it had presented many, I should not readily have ceased admiring these elegant animals, or have been diverted from watching their manners. It was only occasionally that they took those remarkable leaps, which have been the origin of the name ; but when grazing, or moving at leisure, they walked or trotted like other antelopes, or as the common deer. When pursued, or hastening their pace, they frequently took an extraordinary bound, rising with curved or elevated backs high into the air, generally to the height of eight feet, and appearing as if about to take flight. Some of the herds moved by us almost within musket-shot ; and I observed that in crossing the beaten road, the greater number cleared it by one of those flying leaps. As the road was quite smooth and level with the plain,

there was no necessity for their leaping over it ; but it seemed that the fear of a snare, or a natural disposition to regard man as an enemy, induced them to mistrust even the ground which he had trodden." *

The migrations of innumerable companies of springboks, from unknown regions in the interior of Africa, to the abodes of civilisation, are amongst the most extraordinary examples of the fecundity of animal life. The vast quantity of a species of birds of South America, which produce the *guano* (a manure) in sufficient abundance to be a great article of commerce—the flocks of pigeons of North America —the locusts of Africa—are not more striking than the herds of springboks. They do not come alone to the cultivated plains. "The lion has been seen to migrate, and walk in the midst of the compressed phalanx, with only as much room between him and his victims as the fears of those immediately around could procure by pressing outwards."† The immense migratory swarms of these animals which occasionally pour themselves like a deluge from the Bushman territory upon the northern frontiers of the Cape colony, have never been more vividly described than by Captain Stockenstrom, now the Chief Civil Commissioner at the Cape. This description was addressed in a letter to Mr. Pringle, in February, 1824 ; and was afterwards appended as a note to Mr. Thompson's travels. Captain Stockenstrom was a native of the country :—

"It is scarcely possible for a person passing over some of the extensive tracts of the interior, and admiring that elegant antelope the springbok, thinly

* Travels in Southern Africa, vol. ii. p. 109.

† Cuvier's Animal Kingdom, by Griffiths, vol. iv. p. 209. We are indebted to this work for the representations of the skulls of the jackal, the hyæna, and the lion, in the first part of "The Menageries."

scattered over the plains, and bounding in playful innocence, to figure to himself that these ornaments of the desert can often become as destructive as the locusts themselves. The incredible numbers which sometimes pour in from the north, during protracted droughts, distress the farmer inconceivably. Any attempt at numerical computation would be vain ; and by trying to come near the truth, the writer would subject himself, in the eyes of those who have no knowledge of the country, to a suspicion, that he was availing himself of a traveller's assumed privilege. Yet it is well known in the interior, that on the approach of the *Trek-bokken*, (as these migratory swarms are called,) the grazier makes up his mind to look for pasture for his flocks elsewhere, and considers himself entirely dispossessed of his lands until heavy rains fall. Every attempt to save the cultivated fields, if they be not enclosed by high and thick hedges, proves abortive. Heaps of dry manure (the fuel of the Sneeuwbergen and other parts) are placed close to each other round the fields, and set on fire in the evening, so as to cause a dense smoke, by which it is hoped the antelopes will be deterred from their inroads ; but the dawn of day exposes the inefficacy of the precaution, by showing the lands, which appeared proud of their promising verdure the evening before, covered with thousands, and reaped level with the ground. Instances have been known of some of those prodigious droves passing through flocks of sheep, and numbers of the latter, carried along with the torrent, being lost to the owners, and becoming a prey to the wild beasts. As long as these droughts last, their inroads and depredations continue ; and the havock committed upon them is of course great, as they constitute the food of all classes : but no sooner do the rains fall than

they disappear, and in a few days become as scarce on the northern borders as in the more protected districts of Bruintjes-Hoogte and Camdeboo.

"The African colonists themselves can form no conception of the cause of the extraordinary appearance of these animals; and, from their not being able to account for it, those who have not been eye-witnesses of such scenes consider their accounts as exaggerated; but a little more minute inspection of the country south of the Orange River solves the difficulty at once. The immense desert tracts between that river and our Colony, westward of the Zeekoe River, though destitute of permanent springs, and therefore uninhabitable by human beings for any length of time, are, notwithstanding, interspersed with stagnant pools, and *vleys*, or natural reservoirs of brackish water, which, however bad, satisfies the game. In these endless plains, the springboks multiply, undisturbed by the hunter, (except when occasionally the Bosjesman destroys a few with his poisoned arrows,) until the country literally swarms with them; when, perhaps, one year out of four or five, a lasting drought leaves the pools exhausted, and parches up the soil, naturally inclined to sterility. Thus want, principally of water, drives those myriads of animals either to the Orange River or to the Colony, when they intrude in the manner above described. But when the bountiful thunder-clouds pour their torrents upon our burnt-up country, reanimating vegetation, and restoring plenty to all graminivorous animals,—then, when we could, perhaps, afford to harbour those unwelcome visitors, their own instinct and our persecutions propel them again to their more sterile but peaceful and secluded plains, to recruit the numbers lost during their migration, and to resume their attacks upon us, when their necessities shall again compel them."

Upon this interesting subject we are favoured with some original remarks by Mr. Pringle himself; for these, as well as for other information which we shall subsequently introduce, we feel highly indebted to that gentleman, whose opportunities for observation have fortunately gone along with his ability to employ them with advantage to himself and to others :—

"To the above description of the migratory swarms of springboks, I have little to add from my own observation. I once passed through a most astonishing multitude scattered over the grassy plains near the Little Fish River. I could not, for my own part, profess to estimate their number with any degree of accuracy; but they literally *whitened*, or rather *speckled*, the face of the country as far as the eye could reach over those far stretching plains; and a gentleman, better acquainted than myself with such scenes, who was riding with me, affirmed that we could not have fewer of these animals, at one time, under our eye, than twenty-five or thirty thousand.

"I am not aware whether any species of antelope nearly allied to the springbok is to be found in the northern parts of Africa, or in Palestine; but it is a singular circumstance that the name of this animal, in the Bichuana language (*tzebe*,) is precisely the same as that used in the Song of Solomon, to designate an animal of the antelope family, erroneously rendered *roe* in our translation.*

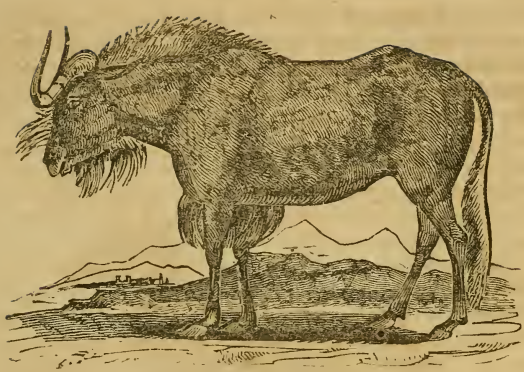
"The springbok is easily tamed when caught young. I have seen it, in several places, reared as a plaything for the children, at the farms of the colonists, —sometimes playing like a pet lamb about [illegible] among the numerous swarms of dogs and [illegible] in other instances accompanying the flocks [illegible] and goats to pasture, and returning as regu[illegible] quietly as the rest.

* Chap. ii. 9—17.

"Such facts demonstrate how easy it would be, with a little care and management, to enlarge the list of domesticated animals, by adding to them many species of such as are at present considered the most shy and impracticable."

The Nylgau. *Antilope picta*, PALLAS—*Taureau Cerf des Indes*, BUFFON, *Supp.*

This is a very remarkable animal, which seems to unite somewhat of the characters of the antelope and the ox. It is as large as a stag, but its limbs are more massive; and, from the shortness of its hind legs, it runs with an appearance of awkward effort. Its Indian name signifies "the blue ox." It [illegible] plain of the Indus, the mountains of [illegible], and probably the chain of the Himalaya. [illegible]d in this country. The individual here [illegible]d was in Atkins' travelling menagerie.



The Gnu—Antilope Gnus, BUFFON.

In the well-arranged menagerie of Mr. Cross, removed from Exeter Change to the King's stables in Pall-Mall East, there are two fine specimens of the male and female gnu. The above is a portrait of the male. These individuals are tolerably gentle, but somewhat uncertain in their tempers.

We are indebted to Mr. Pringle for the following account of this animal, as seen by him in its native regions :—

"The curious animal called *gnu* by the Hottentots, and *wilde beest* (*i. e.* wild ox) by the Dutch colonists, was an inhabitant of the mountains adjoining the Scottish settlement at Bavian's river, and I had therefore opportunities of very frequently seeing it both singly and in small herds. Though usually, and perhaps correctly, by naturalists ranked among the antelope race, it appears to form evidently one of those intermediate links which connect, as it were, the various tribes of animals in a harmonious system in the beautiful arrangement of nature. As the *hyæna* dog, or "*wilde hond*," of South Africa con-

nects the dog and wolf tribe with that of the hyæna, in like manner does the gnu form a graceful link between the buffalo and the antelope. Possessing the distinct features which, according to naturalists, are peculiar to the latter tribe, the gnu exhibits at the same time in his general aspect, figure, motions, and even the texture and taste of his flesh, qualities which partake very strongly of the bovine character. Among other peculiarities I observed, that, like the buffalo or the ox, he is strangely affected by the sight of scarlet; and it was one of our amusements when approaching these animals to hoist a red handkerchief on a pole, and to observe them caper about, lashing their flanks with their long tails, and tearing up the ground with their hoofs, as if they were violently excited, and ready to rush down upon us; and then all at once, when we were about to fire upon them, to see them bound away, and again go prancing round us at a safer distance. When wounded, they are reported to be sometimes rather dangerous to the huntsman; but though we shot several at different times, I never witnessed any instance of this. On one occasion a young one, apparently only a week or two old, whose mother had been shot, followed the huntsmen home, and I attempted to rear it on cow's milk. In a few days it appeared quite as tame as a common calf, and seemed to be thriving; but afterwards, from some unknown cause, it sickened and died. I heard, however, of more than one instance in that part of the colony, where the gnu, thus caught young, had been reared with the domestic cattle, and had become so tame as to go regularly out to pasture with the herds, without exhibiting any inclination to resume its natural freedom; but in consequence of a tendency which the farmers say they evinced to catch, and to communicate to the cattle, a dangerous infection, the practice

of rearing them as curiosities has been abandoned. I know not if this imputation be correct, but it is true that infectious disorders do occasionally prevail to a most destructive extent among the wild as well as the domesticated animals in South Africa, and especially among the tribes of larger antelopes."

"There is another species of gnu found farther to the northward, of which I saw a single specimen in the colony, which in the shape of the horns, and some other particulars, still more resembles the ox. This species has been described by Burchell under the name of *antilope taurina*."

The Gnu's Head.

Mr. Pringle has furnished us with the following description of *the Hartebeest* (*Antilope bubalis*) which also came under his observation.

"The hartebeest is one of the largest and handsomest of the antelope family. It is nearly of the same height as the gnu, but of a more slender and elegant shape. It was pretty numerous on the mountains around our settlement, and not unfrequently furnished us with game. It had many other enemies, I observed, and some of them only less formidable than man, the great destroyer. In the nooks of the narrow ravines, through which the

wild game are wont to descend from the steep and stony mountains, for change of pasturage, or to drink at the fountains that ooze from their declivities, I have frequently found fresh skulls and horns of the hartebeest—those slight relics being all that remained to indicate that there the lion had surprised and rent his prey, and that the voracious hyæna had followed and feasted on the fragments, devouring even the bones, except the skull and a few other unmanageable portions. Though the common hyæna is no match in speed for the fleet full-grown hartebeest, he probably picks up many of the young ones, and is always sure at least of the aged or infirm. The hyæna dog is probably still more destructive. Too slender to attack such an animal as the hartebeest individually, these 'dogs of the desert' associate themselves in packs, to hunt down this and the other large antelopes. I once witnessed a chase of this kind, in which a noble hartebeest, hard pressed by a troop of these 'wildehonden' (as the boors call them,) dashed across our garden and orchard ground, and onwards among our huts, at noon-day. The wild dogs, on hearing the halloo that was raised by some of the people who witnessed this scene, stayed their quest for a brief space, as if alarmed; but, before we could get a gun or two to attack them, they vigorously renewed the chase down the valley, making a small circuit to avoid the houses; and, as the poor antelope seemed sore spent, I have no doubt that he would be speedily run down, notwithstanding the slight advantage he gained by our interference.

"The largest of all the South African antelopes, the Oreas, called by the colonists the eland or elk, was also an inhabitant of our mountains, though more rare than the gnu or hartebeest. This animal, though different in figure, is nearly as large in size as an

ordinary ox. It is a timid and harmless animal, and neither so swift nor so elegant as most of those of its tribe that I have mentioned. When fat, it runs so sluggishly, that the boors in hunting it will frequently ride close up, and, without expending a single shot, stab it with their hunting-knives. Its flesh is not so dry as that of most of the antelope tribe, and approaches more to the flavour and quality of beef. From its value in this respect, and its large size, combined with its deficiency in means of self-protection, this animal is now become very rare, even in the remotest parts of the Cape Colony; and in a short period will probably be altogether extirpated within its limits."

A few years ago the King had several Chamois in Windsor Great Park, but they soon died. In the following page is a portrait of one of those individuals.

The chamois inhabits the most inaccessible parts of the woody regions of the great mountains of Europe. He does not, as the bouquetin, climb to their most pointed summits, and he descends not into the plains. Like the klipspringer of the Cape, he is remarkable for the wonderful extent and precision of his leaps. He bounds over the chasms of rocks—he springs from one projection to another with unerring certainty—he throws himself from a height of twenty or even thirty yards upon the smallest ledge, where there is scarcely room for his feet to plant themselves. This extraordinary power of balancing the body—of instantly finding the centre of gravity,—is a peculiarity of all the goat tribe, to which the chamois is nearly allied. The ability of the eye to measure distances, with such undeviating exactness, is associated with this power of finding the centre of gravity. In the chamois these are instinctive faculties, which he possesses almost from

The Chamois—Antilope Rupicapra, BUFFON.

the moment of his birth. They are not the result of training ; for the young chamois has only to acquire the necessary strength to be able to imitate the feats of his more practised companions. How different is the process by which man obtains the full exercise of his physical powers ! The awkward efforts of the infant, for the first two years of his life, are principally directed to the acquisition of the ability, by constant experiments, of poising his body, of ascertaining the size and relative position of objects by the touch, and of measuring distances by the eye. Throughout life, we cannot be placed in a new situation, in which the exercise of these faculties is demanded, without feeling how completely our powers are the result of experience. We walk safely and easily upon a plane surface, because we have

learned to do so ; but if we slip from any elevation upon a narrow ledge, with what extreme difficulty do we maintain our footing ! Yet another man, possessing originally no greater ability of balancing his body, runs along a parapet without fear or danger. Again, we are constantly mistrusting the distance and size of objects. The accuracy of the eye entirely depends upon its practice. To one unaccustomed to the sea, a ship upon the horizon appears at no great distance ; the sailor can tell that it is far away, and, pretty nearly, how many miles it is off. The practice which is necessary to the exercise of human vision is indeed wonderful ; but the faculty is so gradually acquired, that we may easily deceive ourselves into the belief that it is instinctive. Dr. Thomas Brown has put this strongly in his lectures :—" In those striking cases, which are sometimes presented to us, of the acquisition of sight in mature life, in consequence of a surgical operation, after vision had been obstructed from infancy, it has been found that the actual magnitude and figure, and position of bodies, were to be learned like a new language ; that all objects seemed equally close to the eye ; and that a sphere and a cube, of each of which the tangible figure was previously known, were not so distinguishable in the mere sensation of vision, that the one could be said, with certainty, to be the cube and the other the sphere. In short, what has been supposed, with every appearance of probability, was demonstrated by experiment—that we learn to see."*

And yet man, by constant training, may attain an excellence in the employment of his senses very little inferior to the instinctive powers of the lower animals. The chamois hunters of the Alps are remarkable examples of what he may accomplish by courage,

* Lecture xxviii.

perseverance, and constant experiment. If man fairly bring his physical powers, and his mechanical aids, into a contest even with such surprising faculties as the chamois possesses, the triumph is his; and this triumph shows us that there are few things beyond the reach of human energy. The hunting of the chamois has been strikingly depicted in a work which unites the highest attainments of science, with an occasional display of the more common interest of picturesque description.*

The chamois hunter sets out upon his expedition of fatigue and danger generally in the night. His object is to find himself at the break of day in the most elevated pastures, where the chamois comes to feed before the flocks shall have arrived there. The chamois feeds only at morning and evening. When the hunter has nearly reached the spot where he expects to find his prey, he reconnoitres with a telescope. If he finds not the chamois, he mounts still higher;—but if he discovers him, he endeavours to climb above him and to get nearer, by passing round some ravine, or gliding behind some eminence or rock. When he is near enough to distinguish the horns of the animal (which are small, round pointed, and bent backward like a hook, as in the portrait,) he rests his rifle upon a rock, and takes his aim with great coolness. He rarely misses. This rifle is often double-barrelled. If the chamois falls, he runs to his prey—makes sure of him by cutting the ham-strings—and applies himself to consider by what way he may best regain his village. If the route is very difficult, he contents himself with skinning the chamois;—but if the way is at all practicable with a load, he throws the animal over his shoulder, and bears it home to his family, undaunted

* Voyages dans les Alpes, par H. B. de Saussure. Tom. ii. § 736. Genève, 1786. 4to.

by the distance he has to go, and the precipices he has to cross.

But when, as is more frequently the case, the vigilant animal perceives the hunter, he flies with the greatest swiftness into the glaciers, leaping with incredible speed over the frozen snows and pointed rocks. It is particularly difficult to approach the chamois when there are many together. While the herd graze, one of them is planted as a sentinel on the point of some rock, which commands all the avenues of their pasturage ;—and when he perceives an object of alarm, he makes a sharp hissing noise, at the sound of which all the rest run towards him, to judge for themselves of the nature of the danger. If they discover a beast of prey or a hunter, the most experienced puts himself at their head—and they bound along, one after the other, into the most inaccessible places.

It is then that the labours of the hunter commence ; for then, carried away by the excitement, he knows no danger. He crosses the snows, without thinking of the abysses which they may cover ; he plunges into the most dangerous passes of the mountains—he climbs up, he leaps from rock to rock, without considering how he can return. The night often finds him in the heat of the pursuit ; but he does not give it up for this obstacle. He considers that the chamois will stop during the darkness, as well as himself, and that on the morrow he may again reach them. He passes then the night—not at the foot of a tree, nor in a cave covered with verdure, as does the hunter of the plain—but upon a naked rock, or upon a heap of rough stones, without any sort of shelter. He is alone, without fire, without light ; but he takes from his bag a bit of cheese and some of the barley-bread, which is his ordinary food—bread so hard that he is obliged to break it

between two stones, or to cleave it with the axe which he always carries with him to cut steps which shall serve for his ladder up the rocks of ice. His frugal meal being soon ended, he puts a stone under his head, and is presently asleep, dreaming of the way the chamois has taken. He is awakened by the freshness of the morning air ; he rises, pierced through with cold ; he measures with his eyes the precipices which he must yet climb to reach the chamois ; he drinks a little brandy, (of which he always carries a small provision,) throws his bag across his shoulder, and again rushes forward to encounter new dangers. These daring and persevering hunters often remain whole days in the dreariest solitudes of the glaciers of Chamouni ; and during this time, their families, and, above all, their unhappy wives, feel the keenest alarm for their safety.

And yet, with the full knowledge of the dangers to be encountered, the chase of the chamois is the object of an insurmountable passion. Saussure knew a handsome young man, of the district of Chamouni, who was about to be married ; and the adventurous hunter thus addressed the naturalist :—"My grandfather was killed in the chase of the chamois ; my father was killed also ; and I am so certain that I shall be killed myself, that I call this bag, which I always carry hunting, my winding-sheet : I am sure that I shall have no other ; and yet if you were to offer to make my fortune, upon the condition that I should renounce the chase of the chamois, I should refuse your kindness." Saussure adds, that he went several journeys in the Alps with this young man ; that he possessed astonishing skill and strength ; but that his temerity was greater than either ; and that two years afterwards he met the fate which he anticipated, by his foot failing on the brink of a precipice to which he had leaped. It is the chase itself

which attracts these people, more than the value of the prey ; it is the alternation of hope and fear—the continual excitement—the very dangers themselves —which render the chamois-hunter indifferent to all other pleasures. The same passion for hardy adventure constitutes the chief charm of the soldier's and the sailor's life ; and, like all other passions, to be safe and innocent, it must be indulged in great moderation—near akin as it is to one of our most senseless and mischievous propensities, gambling.

The very few individuals of those who grow old in this trade bear on their countenances the traces of the life which they have led. They have a wild and somewhat haggard and desperate air, by which they may be recognised in the midst of a crowd. Many of the superstitious peasants believe that they are sorcerers—that they have commerce with the evil spirit, and that it is he that throws them over the precipices. When the enormous glaciers and summits of Mont Blanc are beheld from the valleys, it is indeed almost miraculous that any mortal should be found hardy enough to climb them ; and it is not unnatural that a simple peasantry should believe that something above human excitement had inspired these perilous undertakings. To the traveller, or to the native of the vale of Chamouni, Mont Blanc is an object of awe and astonishment ; and the devotion of the instructed, and the superstition of the unenlightened, are perhaps equally tributes to the God of nature, when they thus look upon one of the grandest of natural objects—

"The dread ambassador from earth to heaven."

The chamois is now getting rare in Switzerland, in consequence of the inhabitants being allowed to hunt him at all seasons; but the race may be expected again to multiply, as the old regulations for determining the periods of hunting are again introduced,

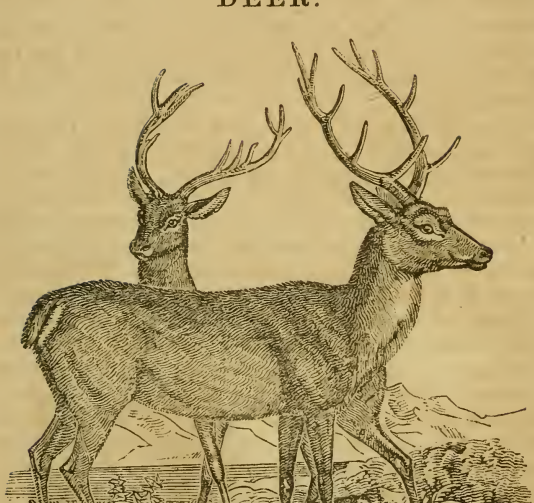
They are rarely caught alive ; and can only be tamed when taken very young. Here and there a tame chamois is seen. The postmaster at the Simplon had two pair, male and female, which are very fine specimens. One pair was sold to the Baron Rothschild ;—the other was purchased last year for the Zoological Society, but they have not yet arrived in this country.

The following cut is a representation of the dangerous situation of two celebrated hunters, in 1826 ; and is copied from a print published at Basle.

Chamois Hunters.

Chapter XIV.

DEER.



The Red Deer

After this picture of the hunting of the chamois, where the antelope is fairly pitted against the man,—strength for strength, stratagem for stratagem, and danger for danger,—how poor must our modern huntings appear! A field of eager sportsmen, fortified against a little fatigue by every excitement of a morning meal, and mounted upon the swiftest

and surest horses, meet to pursue a stag, that is brought to some favourable spot in a cart. The poor creature has probably been hunted several times before—for it is the object of the huntsman to save him from the dogs, if possible, that he may be again tormented. But he well remembers the first fearful cry of the distant hounds,—he hears again the encouraging voices of the men,—the clatter of horses' feet again rings in his ear,—he dreads that he shall find no river to baffle his followers, who must ride to the nearest bridge, while he swims fearlessly across the stream,—he recollects that the sheltering wood was no protection to him, and that the dogs followed him even to the shelter of the peasant's hovel, when he threw himself upon man for succour : he was rescued, it is true, from their devouring teeth ; but he felt all the agonies of anticipated death. And can the creature thus renew such feelings without intense suffering, or his pursuers so excite them without cruelty ? In spite of all the trappings of modern stag-hunting, it is just as unworthy in its principle as the bull-baitings and dog-fights of the populace ; for its object is the same—the torture of an unoffending creature for our own amusement. Emulation in horsemanship is indeed pleasurable and useful; but it is injurious to the moral sense to purchase any advantage or gratification by the infliction of unnecessary misery upon an inferior being.

In ancient times, the stag-hunting even of England had more real excitement about it, for it was not unattended with danger. He that was foremost in the run had duties to perform, and these duties had sometimes rather more of peril about them, than fall to the lot of the modern sportsman, who leaves all which constituted " wood-craft " to the huntsman and the whipper-in. Scott has described one of these dangers in the notes to the Lady of the Lake :—

"When the stag turned to bay, the ancient hunter had the perilous task of going in upon and killing or disabling the desperate animal. At certain times of the year this was held particularly dangerous, a wound received from a stag's horn being then deemed poisonous, and more dangerous than one from the tusks of a boar, as the old rhyme testifies :

> If thou be hurt with hart it brings thee to thy bier,
> But barber's hand will boar's hurt heal, thereof thou needst not fear.

"At all times, however, the task was dangerous, and to be adventured upon wisely and warily, either by getting behind the stag while he was gazing on the hounds, or by watching an opportunity to gallop roundly in upon him, and kill him with the sword. See many directions to this purpose in the Booke of Hunting, Chap. 41. Wilson, the historian, has recorded a providential escape which befell him in this hazardous sport, while a youth, and follower of the Earl of Essex :—

"'Sir Peter Lee, of Lime, in Cheshire, invited my lord one summer to hunt the stagg. And having a great stagg in chase, and many gentlemen in the pursuit, the stagg took soyle. And divers, whereof I was one, alighted, and stood with swords drawne, to have a cut at him, at his coming out of the water. The stagg then, being wonderfully fierce and dangerous, made us youths more eager to be at him. But he escaped us all. And it was my misfortune to be hindered of my coming nere him, the way being sliperie, by a fall ; which gave occasion to some, who did not know mee, to speak as if I had falne for feare. Which being told mee, I left the stagg, and followed that gentleman who [first] spake it. But I found him of that cold temper, that it seems his words made an escape from him ; as by his denial and repentance it appeared.

" ' But this made mee more violent in pursuite of the stagg, to recover my reputation. And I happened to be the only horseman in, when the dogs sett him up at bay ; and approaching nere him on horsebacke, hee broke through the dogs, and run at mee, and tore my horse's side with his hornes, close by my thigh. Then I quitted my horse, and grew more cunning (for the dogs had sette him up againe,) stealing behind him with my sword, and cut his ham-strings ; and then got upon his back, and cut his throate ; which as I was doing, the company came in, and blamed my rashness for running such a hazard.' "

But the chase, at these early periods of our history, supplied the wants both of food and clothing, in a country imperfectly cultivated. Hunting was, originally, a serious occupation, which employed the skill of the bravest men. The first founders of empires are represented to have been hunters. Even within a few centuries, the people of these islands hunted partly for necessity and partly for amusement. When the arts of civilized life, which arise out of the division of labour, were imperfectly known and sparingly pursued, the huntsman found most of his wants supplied by the deer which he killed. A highlander thus addressed Henry VIII. :—

" We go a hunting, and after that we have slain red-deer, we flay off the skin by and by and setting of our bare foot on the inside thereof, for want of cunning shoemakers, by your grace's pardon, we play the cobblers, compassing and measuring so much thereof, as shall reach up to our ancles, pricking the upper part thereof with holes, that the water may repass where it enters, and stretching it up with a strong thong of the same above our said ancles. So, and please your noble grace, we make our shoes. Therefore, we using such manner of shoes, the

rough hairy side outwards, in your grace's dominions of England, we be called 'Rough-footed Scots.'"*

The great huntings of Scotland and of the border countries are well known to all the readers of our old minstrelsy. The "woful hunting" of Chevy Chace has been, perhaps, one of the most popular poems of any language. This union of the chase and of war was a natural alliance; for, amongst a rude people, personal prowess in the one was the quality which most commanded success in the other. Gaston de Foix, occasionally one of the most triumphant, because one of the most cruel, treacherous, and altogether abominable heroes of the days of chivalry, was the mightiest hunter of his day. He is said to have kept sixteen hundred hounds; and he wrote a book on hunting, extremely accurate and curious in its details. All sovereigns, however, did not pursue the chase with the ardour of Gaston-Phœbus, duke of Foix, nor of James V. of Scotland. The Scottish kings used to shoot the deer from an elevated seat as the packs were driven before them—a practice demanding as much enterprise, and altogether as rational, as what, in the terms of modern sporting, is called *the battue*. Pennant, however, in his History of Scotland (vol. ii.,) has described a scene of more danger; and he has translated a passage from an old author, which illustrates, in a graphic way, the ancient modes of hunting:—

"One of the walks retains the name of the *king's seat*, having been the place where the Scottish monarchs placed themselves in order to direct their shafts with advantage at the flying deer, driven that

* Pinkerton's History of Scotland, quoted in the notes to the Lady of the Lake.

way for their amusement. A chase of this kind had very nearly prevented the future miseries of the unhappy Mary Stuart. The story is told by William Barclay, in his treatise *Contra Monarchomachos :* it gives a lively picture of the ancient manner of hunting, and on that account will perhaps be acceptable to the reader in an English dress.

"In the year 1563 the Earl of Athol, a prince of the blood royal, had, with much trouble and vast expense, a hunting match for the entertainment of our most illustrious and most gracious queen ; our people call this a royal hunting. I was then a young man, and was present on that occasion. Two thousand highlanders, or wild Scotch, as you call them here, were employed to drive to the hunting-ground all the deer from the woods and hills of Atholl, Banedoch, Marr, Murray, and the counties about. As these highlanders use a light dress, and are very swift of foot, they went up and down so nimbly, that in less than two months' time, they brought together two thousand red deer, besides roes and fallow deer ; the queen, the great men, and a number of others, were in a glen, when all these deer were brought before them. Believe me, the whole body moved forward in something like battle-order. This sight still strikes me, and ever will strike me, for they had a leader whom they followed close wherever he moved.

"This leader was a very fine stag, with a very high head. This sight delighted the queen very much, but she soon had cause for fear ; upon the Earl's (who had been from his early days accustomed to such sights) addressing her thus : 'Do you observe that stag who is foremost of the herd ? there is danger from that stag ; for if either fear or rage should force him from the ridge of that hill, let every one look to himself, for none of us will be out

of the way of harm; for the rest will follow this one, and having thrown us under foot, they will open a passage to this hill behind us.' What happened a moment after confirmed this opinion; for the queen ordered one of the best dogs to be let loose on one of the deer: this the dog pursues; the leading stag was frighted, he flies by the same way he had come there; the rest rush after him, and break out where the thickest body of the highlanders was; they had nothing for it but to throw themselves flat on the heath, and to allow the deer to pass over them. It was told the queen that several of the highlanders had been wounded, and that two or three had been killed outright; and the whole body had got off, had not the highlanders, by their skill in hunting, fallen upon a stratagem to cut off the rear from the main body. It was of those that had been separated that the queen's dogs and those of the nobility made slaughter. There were killed that day three hundred and sixty deer, with five wolves, and some roes."

The quantity of deer in Great Britain has, of course, diminished with the progress of agricultural improvement. During the last century numerous forests were enclosed in England, which were formerly stocked with red deer, fallow deer, and roebucks; which, existing in an almost wild state, tempted those who lived within their range to a constant life of depredation. What the deer-stealers of the old times were, are the poachers now; and the temptation, in either case, presents a fearful cause of crime and misery. One of these old forests—that of Wolmer in Hampshire,—and its deer-stealers called "Waltham Blacks," have been well described by Mr. White, in his History of Selborne:—

"The red deer, toward the beginning of this cen-

tury, amounted to about five hundred head, and made a stately appearance. There is an old gamekeeper, now alive, named Adams, whose great grandfather, (mentioned in a perambulation taken in 1635,) grandfather, father, and self, enjoyed the head-keepership of *Wolmer Forest* in succession for more than a hundred years. This person assures me that his father has often told him that Queen *Anne*, as she was journeying on the Portsmouth road, did not think the forest of Wolmer beneath her royal regard. For she came out of the great road at Lippock, which is just by, and, reposing herself on a bank smoothed for that purpose, lying about half a mile from Wolmer Pond, and still called the Queen's Bank, saw with great complacency and satisfaction the whole herd of red deer brought by the keepers along the vale before her, consisting then of about five hundred head,—a sight this worthy the attention of the greatest sovereign! But he further adds, that, by means of the Waltham Blacks, or, to use his own expression, as soon as they began blacking, they were reduced to about fifty head, and so continued decreasing till the time of the late Duke of Cumberland. It is now more than thirty years ago that his Highness sent down an huntsman, and six yeomen-prickers, in scarlet jackets laced with gold, attended by the stag-hounds, ordering them to take every deer in this forest alive, and to convey them in carts to Windsor. In the course of the summer they caught every stag, some of which showed extraordinary diversion; but in the following winter, when the hinds were also carried off, such fine chases were exhibited as served the country people for matter of talk and wonder for years afterwards. I saw myself, one of the yeomen-prickers single out a stag from the herd, and must confess that it was

the most curious feat of activity I ever beheld, superior to anything in Mr. Astley's riding-school. The exertions made by the horse and deer much exceeded all my expectations, though the former greatly excelled the latter in speed. When the devoted deer was separated from his companions, they gave him, by their watches, law, as they called it, for twenty minutes ; when, sounding their horns, the stop dogs were permitted to pursue, and a most gallant scene ensued.

" Though large herds of deer do much harm to the neighbourhood, yet the injury to the morals of the people is of more moment than the loss of their crops. The temptation is irresistible ; for most men are sportsmen by constitution, and there is such an inherent spirit for hunting in human nature, as scarce any inhibitions can restrain. Hence, towards the beginning of this century, all this country was wild about deer-stealing. Unless he was a *hunter*, as they affected to call themselves, no young person was allowed to be possessed of manhood or gallantry. The Waltham blacks at length committed such enormities that government was forced to interfere with that severe and sanguinary act called the black act, which now comprehends more felonies than any law that ever was framed before ; and, therefore, a late bishop of Winchester, when urged to re-stock Waltham chase, refused, from a motive worthy of a prelate, replying that 'It had done mischief enough already.'

" Our old race of deer-stealers are hardly extinct yet. It was but a little while ago, that, over their ale, they used to recount the exploits of their youth ; such as watching the pregnant hind to her lair, and, when the calf was dropped, paring its feet with a penknife to the quick, to prevent its escape, till it was large and fat enough to be killed ; the shooting

at one of their neighbours with a bullet in a turnip field by moonshine, mistaking him for a deer ; and the losing a dog in the following extraordinary manner :—Some fellows, suspecting that a calf new fallen was deposited in a certain spot of thick fern, went with a lurcher to surprise it ; when the parent hind rushed out of the brake, and, taking a vast spring with all her feet close together, pitched upon the neck of the dog, and broke it short in two."

We were witnesses of a scene somewhat like that of driving the deer described by Mr. White, though upon a larger scale. In the year 1814, Windsor Forest, which extended over seventeen parishes, was disafforested. It was full of deer, in many districts. Parts of the forest were allotted to the crown for a park, and parts were given in compensation for rights of pasture and turbary, to the several parishes. The people, however, led on by some bold spirits, took up a notion that the instant the Inclosure Bill had received the Royal Assent, the deer were common property. An immense slaughter immediately began ;—the attack was too general to be resisted by the forest officers ; nor were they quite sure that their duties were not at an end. The people were regardless of the threats of the law ; and as its pace was somewhat tardy, it was very wisely thought better to remove the temptation than to fill the jails. A hunting was directed, upon a scale which partook of the pomp of the old chivalrous days. A regiment of horse-guards was ordered out to drive the deer. Hundreds of horsemen assembled from all parts of the country ; and for several days every thicket of that finely-wooded district echoed—not with hound and horn—but with the trumpet summoning the cavalry to charge—or to hem-in the herds that were gathering in affright from every quarter. Sometimes an old

stag, made more adventurous by the new terrors which were about him, dashed through the lines of cavalry. The heavy tramp of the horse was immediately heard behind the noiseless bound of the deer; but the chase was generally unavailing, and the terrified creature escaped to his native brakes, once more to hide in a wilderness of fern. Some hundreds of deer were at length driven into the enclosed park; and this extraordinary hunting terminated.

There can be little doubt that, at one period of its history, probably when the surface, which is now morass or peat bog, or cleared and under tillage, was covered with forests, deer were abundant in most parts of Scotland. There was then, probably, a variety which is now extinct, for, in some of the bogs, horns are found of larger dimensions than any that are to be seen upon the present fallow deer, or the red deer of the mountains.

The red deer are now far from numerous, and are seldom if ever seen on the Grampians. This has, no doubt, arisen from the grazing of sheep and cattle, by which the seclusion the red deer are so fond of, has been broken in upon, both in the mountains and in the valleys. As the more lucrative occupation of the soil extends into the remoter districts, the race must further and further decrease; nor is the period at which they will be wholly extinct, in all probability, very distant. Red deer are yet found in Mar Forest and Glenartney; and there are still a considerable number in the west parts of Ross and Sutherland; though the extensive and judicious improvements which, very much to the general advantage of the country, have recently been effected, under the Marquis of Stafford, have made them more rare than they were about the end of the last century. Now, unless by a person whom

long observation has rendered familiar with their haunts, the country may be traversed without seeing even one. From their fleetness, and the nature of the ground on which they are found, horses and hounds are of no use in the direct chase of them, as the steed would be required to leap precipices of fifty feet instead of gates of five bars; and the dogs would be constantly tumbling into gullies and ravines, which are cleared by the deer at one bound. They cannot be driven "with hound and horn," as was the case in the days of the "barons bold;" neither can they be collected and hemmed-in, after the somewhat similar manner in which the highland chiefs conducted their sports. Still there are a few places where a person who has been habituated to the occupation, and who does not fear to ground himself in a morass, and will submit to the other pleasures of "stalking," may occasionally find a roe. The most certain time is when the state of the weather is such as to force the herds to the well-heads, where there is brushwood near to cover the marksman.

The largest forest set apart for red deer which exists in Scotland, is the forest of Atholl, where a hundred thousand English acres are given up to them; and upon this large tract neither man, woman, child, sheep, or oxen, are allowed to trespass, with the exception of those parties who are permitted to partake of the mysteries of deer-stalking.

The sportsmen, seldom more than two in each party, set forth accompanied by a keeper who acts as general; and they are followed by two or three highlanders, carrying spare rifles and leading the deer-hounds. The party is preceded by the keeper, who is about twenty or thirty yards in advance, attentively examining the face of every hill with his telescope, to discover the deer that may be grazing upon it. Upon detecting a herd, a council of war is

held, and the plan of operations determined upon. It is necessary to proceed with much caution, as independent of the strong sense of smelling, seeing, and hearing, which these animals are endued with, there is always one of the herd, generally a hind, or female deer, stationed as sentinel ;—and upon the least suspicion being excited, the signal is given, and they are off. Great care is therefore taken in the approach to advance up the wind, and to conceal the party by taking advantage of the inequalities of the ground, preserving the strictest silence. It frequently happens that the sportsmen are obliged to make a circuit of some miles to get near them undetected—at other times they may find that they are in a situation from which they cannot extricate themselves unseen, in that case they must lie down till the herd move into a more favourable position for their purpose. Having arrived as near to them as is possible without detection, the sportsmen, after a careful examination of their rifles, still keeping themselves much concealed as possible, fire, and continue firing and loading as long as they remain within distance. Eleven out of a herd of fifteen have been known to be killed by one person: the singular circumstance of an echo, the sound being heard on one side, and the flash appearing on the other, so puzzled the deer, that they stood still, till the four last gathered courage and made off. When wounded, large hounds, of a breed between the greyhound and the bloodhound, are let loose upon the track of their blood, and they never leave it till they have brought the animal to bay, generally in some stream, where they keep him till the sportsman comes up and despatches him by shooting him through the head. It is necessary for the hunter to be very cautious in approaching him when at bay, and always to keep

him down the stream from where he stands ; for, if he breaks his bay, he is very likely to attack his pursuer, gore him with his horns, or trample him to pieces with his feet. This is of all European sports the most noble and interesting, as any person who has tried and understands it will testify, heightened as it is by the wildness and beauty of the scenery, the pure invigorating effect of the mountain air, the picturesque dress and appearance of the highlanders, and the eager interest they take in a pursuit so peculiar to their own hills and so congenial to their habits.

Fallow deer are much more abundant in Scotland, not only in enclosed parks, but, at large, over the country. They are found in many of the lowland plantations in Forfar and Perthshire ; which seems to indicate that a restoration of the woods would lead to an increase of their numbers. Those that are found in the situations alluded to, have no doubt been produced by individuals which had escaped from the parks. In summer, they are not often seen ; but when the winter is severe, they sometimes invade the cottage gardens, in troops of six or eight together.

In a state approaching that of nature, they are most plentiful in the central part of the Grampians, from which it is probable that they may extend their numbers into all those mountain districts, where planting has been preferred to grazing. They are most numerous on the southern part of the bleak, and, generally speaking, naked ridge of Minigny, which lies between the Glen of Athol on the south, and Badenach on the north ; and between the lofty summits of Ben-y-glac on the east, and the pass of Dalnavardoch on the west. The greater part of this ridge is the property of the Duke of Athol, although

many deer are found on the lands of the Duke of Gordon and others, towards the east.

The deer are seldom on the summits; but generally in the glens of the Tilt and Bruar. Those deer are often seen in herds of upwards of a thousand; and when, in a track where there is no human abode for twenty or thirty miles, a long line of bucks appear on a height with their branching horns relieved upon the clear mountain sky, the sight is very imposing.

During the rutting season, the deer are in the fastnesses of the glens; and though they are there more frequently heard, they are not so numerously seen as in their milder moods.

The various species of deer, as well as the antelopes, remain invariably in their original situation, when left in a state of nature. Two species are common to the north of the old and the new continents; five belong to North America; four to America, south of the equator; four to Europe and the continent of Asia; and fourteen to India, to China, and to the Archipelagos of the southeast of Asia.

Of the British deer, the only existing species are the red deer (*Cervus Elaphus*,) the roe (*Cervus Capreolus*,) and the fallow deer (*Cervus Dama.*)

The red deer is about three and a half feet in height; the female goes with young eight months, and produces one at a birth; the horns are branched, round, and recurved.

The roe is about two and a quarter feet high; the female goes with young five months and a half, and produces two at a birth; the horns are branched, round, erect, with bifid summits.

The fallow deer, the most gentle of the deer tribe, with which our parks are principally stocked, is

smaller than the red deer; the female goes with young eight months, and produces one or two, and sometimes (though rarely) three at a birth. The horns are branched, recurved, compressed, and palmated at the top.

We have already stated that the antlers of the deer fall off, and are annually renewed. This peculiarity is a most singular provision of nature; and the mode in which the process is effected offers many examples of animal economy. We transcribe a description of the process from Blumenbach's 'Comparative Anatomy,' translated by Mr. Lawrence and Mr. Coulson:—

"The annual reproduction of horns constitutes, in many points of view, one of the most remarkable phenomena of animal physiology. It affords a most striking proof, first of the power of the nutritive process, and of the rapid growth which results from this process in warm-blooded animals; for the horn of a stag, which may weigh a quarter of a hundredweight, is completely formed in ten weeks: secondly, of the remarkable power of absorption, by which, towards the time of shedding the old horn, a complete separation is effected of the substance which was before so firmly united with the frontal bone: thirdly, of a limited duration of life in a part of an animal, entirely independent of the life of the whole animal, which in the stag extends to about thirty years: fourthly, of change of calibre in particular vessels; for the branches of the external carotid, which supply the horn, are surprisingly dilated during its growth, and recover their former dimensions when that process has ceased: fifthly, of a peculiar sympathy which is manifested between the growth of the horns and the generative functions."

The able translators of Blumenbach have added the following note, in illustration of these curious physiological facts :—

"The word *horn*, which is frequently applied in English to the *antlers* of the deer kind, as well as to the real horns of other genera, would lead to very erroneous notions on this subject. The *antler* is a real bone ; it is formed in the same manner, and consists of the same elements as other bones ; its structure is also the same.

"It adheres to the frontal bone by its basis ; and the substance of the two parts being consolidated together, no distinction can be traced, when the antler is completely organized. But the skin of the forehead terminates at its basis, which is marked by an irregular projecting bony circle ; and there is neither skin nor periosteum on the rest of it. The time of its remaining on the head is one year : as the period of its fall approaches, a reddish mark of separation is observed between the process of the frontal bone and the antler. This becomes more and more distinctly marked, until the connexion is entirely destroyed.

"The skin of the forehead extends over the process of the frontal bone when the antler has fallen. At the period of its regeneration, a tubercle arises from this process, and takes the form of the future antler, being still covered by a prolongation of the skin. The structure of the part at this time is soft and cartilaginous ; it is immediately invested by a true periosteum, containing large and numerous vessels, which penetrate the cartilage in every direction; and, by the gradual deposition of ossific matter, convert it into a perfect bone.

"The vessels pass through openings in the projecting bony circle at the base of the antler : the

formation of this part proceeding in the same ratio with that of the rest, these openings are contracted, and the vessels are thereby pressed, until a complete obstruction ensues. The skin and periosteum then perish, become dry, and fall off; the surface of the antler remaining uncovered. At the stated period it falls off, to be again produced, always increasing in size.

"The horn is shed in the spring, and reproduced in summer."

A remarkable provision of nature, which is peculiar to deers and antelopes, has been described by some naturalists, and doubted by others. Mr. White, with his usual accuracy of observation, has noticed the additional *spiracula*, which, he says, enable the animal to breathe when drinking, and assist him when pursued.

"If some curious gentleman would procure the head of a fallow deer, and have it dissected, he would find it furnished with two spiracula, or breathing-places, besides the nostrils—probably analogous to the *puncta lachrymalia* in the human head. When deer are thirsty, they plunge their noses, like some horses, very deep under water while in the act of drinking, and continue them in that situation for a considerable time; but, to obviate any inconveniency, they can open two vents, one at the inner corner of each eye, having a communication with the nose. Here seems to be an extraordinary provision of nature worthy our attention, and which has not, that I know of, been noticed by any naturalist; for it looks as if these creatures would not be suffocated, though both their mouths and nostrils were stopped. This curious formation of the head may be of singular service to beasts of chase, by affording them

free respiration ; and no doubt these additional nostrils are thrown open when they are hard run. Mr. Ray observed that, at Malta, the owners slit up the nostrils of such asses as were hard worked ; for they, being naturally straight, or small, did not admit air sufficient to serve them when they travelled, or laboured in that hot climate. And we know that grooms and gentlemen of the turf think large nostrils necessary, and a perfection, in hunters and running-horses.

" Oppian, the Greek poet, by the following line, seems to have had some notion that stags have four spiracula :—

" *Τετραδυμοι ρινες, πισυρες πνοιησι διαυλοι.*" *

" In answer to this account (says Mr. White,) Mr. Pennant sent me the following curious and pertinent reply :—' I was much surprised to find in the antelope something analogous to what you mention as so remarkable in deer. This animal also has a long slit beneath each eye, which can be opened and shut at pleasure. On holding an orange to one, the creature made as much use of these orifices as of his nostrils, applying them to the fruit, and seeming to smell it through them.' "

In the heads of deer and antelopes there are cavities imbedded in a bony case, varying in size in different species of these animals. The French call them *larmiers*, believing them receptacles for tears, of which the thinner part evaporating, a substance remains, called *larmes de cerf*. To this circumstance may be attributed the belief of the poets that the deer weeps. Sir Everard Home has explained the construction of these larmiers.†

* Nostrils divided into four parts—quadruple channels for breathing.

† Comparative Anatomy, vol. iii. p. 245.

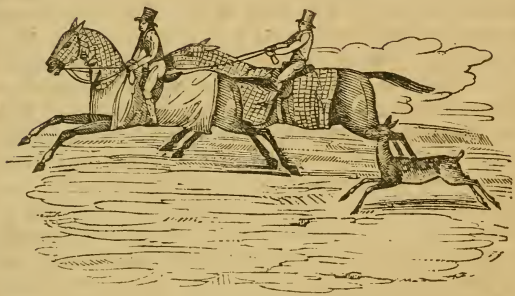
We have already mentioned in a former chapter the smallness and peculiar hardness of the bone of the deer's foot : it is this peculiarity which renders the animal as strong as he is fleet. The support and strength of the joints of the feet of all animal bodies, according to Sir E. Home, depends less upon their own ligaments than upon the action of the muscles whose tendons pass over them. He says—" This fact was strongly impressed on my mind, in the early part of my medical education, by seeing a deer which leaped over the highest fences, and the joints of whose feet, when examined, were as rigid, in every other direction but that of their motion, as the bone itself; but when the tendo Achillis which passed over the joint was divided, with a view to keep the animal from running away, the foot could readily be moved in any direction, the joint no longer having the smallest firmness."*

The stag is sometimes domesticated, and the fallow deer very often. In an old work, (not always to be relied upon for the accuracy of its statements,) " Wanley's Wonders of this Little World," we find the following story :—" The Count of Stolberge, in Germany, had a deer, which he bestowed on the Emperor Maximilian the Second, that would receive a rider on his back, and a bridle in his mouth, and would run a race with the fleetest horse that came in the field, and outstrip them too." Martial also mentions a deer used to the bridle.†

The fallow deer may be easily induced to live in stables ; and he manifests a sort of affection for the horse. At Newmarket, last year, there was a deer which was accustomed regularly to exercise with the race-horses ; and the creature was delighted to gallop

* Comparative Anatomy, vol. i., p. 96.
† Ep., l. xv., ep. 96.

round the course with them in their morning training.



The arrangement of the teeth of the various species of deer, and of the antelope tribes, is generally as follows, though there are constant exceptions :—

Incisors, $\frac{0}{8}$. Canine, $\frac{0\ 0}{0\ 0}$. Molar, $\frac{6-6}{6-6}$.—Total, 32

Chapter XV.

THE REIN-DEER.

The Rein-deer—Cervus Tarandus, Linnæus—*Cervus rangifer*, Brisson.—*Renne*, Buffon.

The rein-deer of the Zoological Gardens, which was added to that interesting collection in the autumn of 1828, appears to present one of the few examples of this animal thriving in Great Britain. He is a very fine specimen of the white variety; is strong limbed; and is about three feet six in height. His horns were large and branching, as represented, before the winter. They were shed very early in the spring. He is a quiet and gentle creature.

It is remarkable that the rein-deer when confined

to a small enclosure, and even to a room, has not suffered so much from the climate of England, as those which have been allowed greater freedom. An attempt was made about seven years ago to introduce the rein-deer upon an extensive scale, in the colder parts of England and Scotland. Many persons will remember Mr. Bullock's exhibition of rein-deers and a Lapland family. Out of two hundred deer, which were brought by him from Norway, nearly every one died. Those that were turned out upon the Pentland-hills, near Edinburgh—a situation which was considered peculiarly favourable—all died. A few appeared to do well in a park near Dublin; but we are unable to say if they are still alive. The Duke of Athol had previously placed a herd of rein-deer in the mountains of his estate, but the experiment failed in a similar way. This circumstance is not to be attributed to the want of proper food—for the rein-deer moss is found abundantly in Scotland. It grows, too, in many parts of England, particularly on Bagshot-heath. But the same ill success has attended the introduction of the larger species of deer, which belong to the new Continent. Several fine specimens of the Wapiti—the American elk—were turned into Windsor Park a few years ago; none of them lived more than a year. Whether these trials have failed through a want of proper attention to the peculiar habits of the animal, or that they naturally result from the tenacity with which the deer tribe adhere to their original geographical position, as a law of nature—is a question not easy to be decided.

An opinion had for a long time prevailed amongst naturalists, which arose with Buffon, that the rein-deer formerly existed in the Alps and the Pyrenees; and this opinion (which seemed well founded) was almost the sole exception to the general acknow-

ledgement of the laws of zoological geography—or the partition of animals according to the distribution of heat over the globe. The actual localities of the rein-deer are quite consistent with these laws, as laid down by Humboldt. But the belief that the rein-deer formerly existed in the mountains of southern Europe was founded upon a passage in the Treatise on Hunting, by Gaston de Foix. This accurate writer, in the *printed* copies of his book, is made to say, speaking of the rein-deer, under the name of the *Rangier*, "I have seen them in *Maurienne* and *Pueudève*," (Savoy and Bearn.) Cuvier, however, with his accustomed penetration and industry, applied himself to examine the original manuscripts of the princely hunter. In the Royal Library at Paris, there are three MS. copies of the Treatise on Hunting, and one in particular, finely written and illuminated, given by Gaston de Foix himself to Philip duke of Burgundy. The result was highly satisfactory. The passage was *written* distinctly thus :—"J'en ai vu en *Nourvègue* et *Xuedène*"—(in Norway and Sweden.) Had it not been for the sagacity of Cuvier, who thought it much more probable that old transcribers would have been inaccurate, than that the laws of nature should have presented such a remarkable exception,—the printers would have continued to puzzle the naturalists, perhaps, for another century. The history of Gaston de Foix shows us that he went to Sweden in 1357; and it is not unlikely that he took a portion of his sixteen hundred dogs to chase the rein-deer, upon his old principle that hunting was necessary for his health, and a sure preservative against the power of the evil spirit.

The actual locality of the rein-deer, determined as it is by the temperature of the polar climates, presents another of the many forcible examples

of the inseparable connexion of particular animals with the wants of human society. The rein-deer has been domesticated by the Laplanders from the earliest ages; and has alone rendered the dreary region in which this portion of mankind abides at all supportable. The civilisation of those extreme northern regions, which is steadily advancing, entirely depends upon the rein-deer. All communication through the interior parts of Lapland is suspended in summer; and the inhabitants of Finmark travel by land only in the winter season.

The traveller from Norway or Sweden may proceed with ease and safety even beyond the polar circle, but when he enters Finmark he cannot stir without the rein-deer; and with this faithful servant the Finmark dealer may travel from his native wilds, to dispose of his produce in the markets of Tornea and Stockholm. The rein-deer alone connects two extremities of a kingdom; and, without him, the comforts and the knowledge of civilized life could never be extended over those countries, which, during a

Laplander in his Sledge.

great part of the year, are cut off from all other communication with the other portions of mankind.*

The inhabitants of Lapland are divided into two classes; those who live upon the shore and subsist by fishing, and those who wander through the summer and winter, with no shelter but their tents, and no provision but their rein-deer. In summer, the wandering, or mountain Laplander is compelled to undertake the most arduous journeys to the coast, for the preservation of his deer. Mr. De Broke has described these migrations :†—

"Whale Island, during the summer months, is never without three or four families of mountain Laplanders (Field-finner,) with their herds of rein-deer. The causes that induce, nay, even compel these people to undertake their long and annual migrations from the interior parts of Lapland to its coast, though they may appear singular, are sufficiently powerful. It is well known, from the account of those travellers who have visited Lapland during the summer months, that the interior parts of it, particularly its boundless forests, are so infested by various species of gnats and other insects, that no animal can escape their incessant persecutions. Large fires are kindled, in the smoke of which the cattle hold their heads, to escape the attack of their enemies; and even the natives themselves are compelled to smear their faces with tar, as the only certain protection against their stings. No creature, however, suffers more than the rein-deer from the larger species (œstrus tarandi,) as it not only torments it incessantly by its sting, but even deposits its egg in the wound it makes in its hide. The poor animal is thus tormented to such a degree, that the Laplander

* See De Broke's Travels in Lapland, p. 75. † Ibid. p. 31.

if he were to remain in the forests during the months of June, July, and August, would run the risk of losing the greater part of his herd, either by actual sickness, or from the deer fleeing of their own accord to mountainous situations to escape the gad-fly. From these causes the Laplander is driven from the forests to the mountains that overhang the Norway and Lapland coasts, the elevated situations of which, and the cool breezes from the ocean, are unfavourable to the existence of these troublesome insects, which, though found on the coast, are in far less considerable numbers there, and do not quit the valleys; so that the deer, by ascending the highlands, can avoid them."

The wild herds of rein-deer ascend the mountains in the summer to free themselves from these parasitical insects of the forests; and the tame deer often wander from their masters for the same object. These insects, particularly the *œstrus*, so terrify the herds, that the appearance of a single one will render them furious. Schreber, a celebrated naturalist,

Insects which attack the Rein-deer

has represented these periodical tormentors of the poor rein-deer. The Laplanders say, that one of their objects in going to the coasts is, that the deer may drink the sea-water; and that he takes one draught, which destroys the larvæ of the fly, but never repeats it.

According to the accounts of the people of Finmark, the attacks of these fearful creatures are not the only torments of the rein-deer. An insect, or rather worm, the *furia infernalis*, originally mentioned by Linnæus, is said to produce the most fatal effects upon the herds. Linnæus, indeed, altered his opinion late in life as to the existence even of this worm; and the Swedish naturalists now treat it as entirely fabulous. Dr. Clarke, however, supposes himself to have been wounded by this very creature during his travels in Sweden. The Laplanders themselves firmly believe in its existence: and its fatal powers, as represented by these people, are thus described by De Broke:—

"In 1823, the Laplanders are stated to have suffered so greatly in their herds, that five thousand head died from the sting of this creature; and that even the wolves and other animals, that preyed upon the dead carcasses, caught the infection, and died with the same symptoms. A Laplander, who possessed five hundred deer, on perceiving the destruction among them, thought it best to kill the whole herd; but so quickly did its ravages spread, that, before he could accomplish his purpose, they all died. Great numbers of cattle and sheep were likewise destroyed by its attack, and it fell in some degree upon the human species, a few having become victims to it. A young girl, who was shearing some sheep that had died from the attack of the *furia*, felt, while thus employed, a sudden pain in one of her fingers, which rapidly increased, and on examining the part, she found a small puncture, like the prick of a needle; her master, who was by, had the presence of mind to cut the finger off on the spot, and it was the means of saving her life.

"The pest is stated to have been confined to Russian and Swedish Lapland, and did not spread

higher than Muonioniska. Norwegian Lapland fortunately was not visited with this calamity ; and, in order to prevent it from being introduced, all furs, during the year of its prevalence, were forbidden to be purchased." *

It is quite true that, during the summer of 1823, there was an extraordinary mortality amongst the rein-deer of Norway and Lapland ; but the better informed people attributed it, not to the *furia infernalis*, but to some unwholesome quality of the moss ; and the medical men at Stockholm considered the disease with which the herds had been attacked as a particular variety of hydrophobia. The rein-deer are also subject to inflammation of the brain ; which probably arises from their great sensibility to heat. In the hottest weather, the thermometer rises even at the North Cape, as high as 90° of Fahrenheit.

The movements of the wandering Laplander are determined by those of his deer. As camels constitute the chief possession of an Arab, so do the rein-deer comprise all the wealth of a Laplander. "The number of deer belonging to a herd is from three hundred to five hundred ; with these a Laplander can do well, and live in tolerable comfort. He can make in summer a sufficient quantity of cheese for the year's consumption ; and, during the winter season, can afford to kill deer enough to supply him and his family pretty constantly with venison. With two hundred deer, a man, if his family be but small, can manage to get on. If he have but one hundred, his subsistence is very precarious, and he cannot rely entirely upon them for support. Should he have but fifty, he is no longer independent, or able to keep a separate establish-

* Travels, p. 99.

ment, but generally joins his small herd with that of some richer Laplander, being then considered more in the light of a menial, undertaking the laborious office of attending upon and watching the herd, bringing them home to be milked, and other similar offices, in return for the subsistence afforded him."* With this stock the Laplander wanders through the greatest variety of wild and beautiful scenery ; but he is little sensible to the impressions which such regions produce upon the mind of an intelligent traveller. The extremes of bodily fatigue and want leave little room for the cultivation of the mind ; and the love of the sublime and beautiful of nature belongs to an advanced stage of the intellect. These rich summer scenes of Lapland are wonderfully enlivened by the presence of the wanderer and his herds. Von Buch, a celebrated traveller, has well described the evening milking-time :—

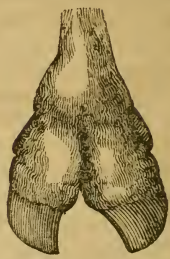
"It is a new and a pleasing spectacle, to see in the evening the herd assembled round the gamme (encampment) to be milked. On all the hills around, everything is in an instant full of life and motion The busy dogs are everywhere barking, and bringing the mass nearer and nearer, and the rein-deer bound and run, stand still, and bound again, in an indescribable variety of movements. When the feeding animal, frightened by the dog, raises his head, and displays aloft his large and proud antlers, what a beautiful and majestic sight ! And when he courses over the ground, how fleet and light are his speed and carriage ! We never hear the foot on the earth, and nothing but the incessant crackling of his knee-joints, as if produced by a repetition of electric shocks—a singular noise ; and from the number of rein-deer, by whom it is at once produced, it is heard

* De Broke, p. 45.

at a great distance. When all the herd, consisting of three or four hundred, at last reach the gamme, they stand still, or repose themselves, or frisk about in confidence, play with their antlers against each other, or in groupes surround a patch of moss browsing. When the maidens run about with their milk vessels from deer to deer, the brother or servant throws a bark halter round the antlers of the animal which they point out to him, and draws it towards them ; the animal generally struggles, and is unwilling to follow the halter, and the maiden laughs at and enjoys the labour it occasions, and sometimes wantonly allows it to get loose that it may again be caught for her ; while the father and mother are heard scolding them for their frolicksome behaviour, which has often the effect of scaring the whole flock. Who, viewing this scene, would not think on Laban, on Leah, Rachel, and Jacob ? When the herd at last stretches itself, to the number of so many hundreds at once, round about the gamme, we imagine we are beholding an entire encampment, and the commanding mind which presides over the whole, stationed in the middle."

The noise which the traveller describes as "the crackling of his knee-joints," is produced by the contraction of the rein-deer's hoofs, when the foot is raised from the ground. These hoofs are not narrow and pointed, like those of the fallow deer, which finds its food upon unyielding surfaces ; but they are broad and spreading ; and thus, when the rein-deer crosses the yielding snows, the foot presents a large surface, and, like the snow-shoe of the Norwegians and Canadian Indians, prevents, to a certain extent, the animal sinking as deeply as it would if the hoof were small and compact.

Rein-deer's foot contracted.



Rein-deer's foot expanded

The Laplander's summer lasts from about June to September. The herds and their owners depart therefore from the coasts early in that month, that they may take up their winter quarters before the fall of the snows. As the winter approaches, the coat of the rein-deer begins to thicken in the most remarkable manner, and assumes that lighter colour, which is the great peculiarity of polar quadrupeds. During the summer the animal pastures upon every green herbage, and browses upon the shrubs which he finds in his march. In the winter his sole food is the *lichen*, or moss, which he instinctively discovers under the snow. It is a singular, and now well-established fact, that the rein-deer will eat with avidity the lemming, or mountain rat, presenting one of the few instances of a ruminating animal being in the slightest degree carnivorous. The extraordinary instinct with which the rein-deer discovers the lichen, is well illustrated by De Broke :—

"The flatness of the country increased as we proceeded, and at times it was even difficult to tell whether we were moving on land or water, from the uniformity of the white surface around us. In this respect our deer were far better judges than our-

selves, as, though there might be a depth of some feet of snow above the ice, wherever we stopped for a few minutes upon any lake, in no one instance did they attempt to commence their usual search after their food ; yet, when upon land, their natural quickness of smell enabled them to ascertain, with almost unerring certainty, whether there was any moss growing beneath them or not. By the fineness of this sense of the animal the Laplanders are chiefly guided in fixing their different winter-quarters ; never remaining in those parts which they know with certainty produce but little moss, from the indifference of their deer, and the few attempts made by them in removing the snow."

When the winter is fairly set in, the peculiar value of the rein-deer is felt by the Laplanders. Without him, as we have already said, communication would be almost utterly suspended. Harnessed to a sledge, the rein-deer will draw about 300 lbs ; but the Laplanders generally limit the burden to 240 lbs. The trot of the rein-deer is about ten miles an hour ; and their power of endurance is such, that journeys of one hundred and fifty miles in nineteen hours are not uncommon. There is a portrait of a rein-deer in the palace of Drotningholm (Sweden,) which is represented, upon an occasion of emergency, to have drawn an officer with important despatches the incredible distance of eight hundred English miles in forty-eight hours.* This event is stated to have happened in 1699, and the tradition adds, that the deer dropped down lifeless upon his arrival. Pictet, a French astronomer, who visited the northern parts of Lapland in 1769, for the purpose of observing the transit of Venus, was anxious to know the speed of the rein-deer ; and therefore started three rein-

*De Broke's Winter in Lapland.

deer in light sledges, for a certain short distance, which he accurately measured. The following was the result :—

"The first deer performed 3089 feet, 8 inches, and $\frac{96}{100}$, in two minutes, being at the rate of nearly 19 English miles in an hour, and thus accomplishing 25 feet, 8 inches, and $\frac{96}{100}$, in every second.

"The second did the same in three minutes ; and the third and last deer, in three minutes and twenty-six seconds. The ground in this race was nearly level."

The rein-deer requires considerable training to prepare him for sledge-travelling ; and he always demands an experienced driver. If the animal is not well broken-in he is unmanageable ; and if the driver is inexpert, the deer has sagacity enough to turn round and rid himself of him by the most furious assaults. Mr. De Broke several times felt the inconvenience of ill-trained deer, in his winter journey across Lapland.

"The deer we had procured were as unmanageable and unruly as deer could well be, being none of them well broken-in ; and our first set off was by no means a pleasant one, as, after tumbling with the quickness of lightning down the steep bank of the river, the deer proceeded at full gallop across a very rough and broken country, with steep and slippery descents. It was quite impossible, from the nature of the ground, to prevent being frequently rolled over in the pulk (sledge ;) and, when this was the case, the strength and freshness of the deer, and the good order of the snow, which was very hard, made them regard very little the additional weight caused by the prostrate position of the sledge ; so that they continued to follow, at full speed, the rest of the deer, leaving the unfortunate wight at their heels to find his

balance again as well as he could.* Notwithstanding that which had been harnessed to my pulk was by no means a lamb in quietness, I had good reason to congratulate myself upon having escaped the animal which one of the party had to his share, and which was a deer of the wild breed, that had been caught when young by the Laplanders. In size it was larger than the others, thinner, with more appearance of bone, and considerably stronger. With respect to any command over it, this was quite out of the question; and it dragged pulk and driver along with the greatest ease wherever it pleased." †

And yet these instances of resistance to their drivers are only exceptions to the general character of the rein-deer. He is ordinarily so docile that he scarcely needs any direction; and so persevering that he toils on, hour after hour, without any refreshment, except a mouthful of snow which he hastily snatches. "We again resumed our course, the deer appearing no way fatigued, and proceeding so steadily and quietly, that the act of driving them was merely holding the rein, which became at last so tedious, that some of the party behind lashed their deer to the sledge before, the whole keeping up a long steady trot. This is the usual travelling pace of the rein-deer when performing long journeys; for though, occasionally, the animal may proceed at a gallop for some miles on first starting, or in those situations where the snow is very good, it is natural to suppose it will gradually relax its pace. The speed of the party, however, is entirely dependent upon the foremost deer, by which the motions of those behind are almost entirely regulated; and I observed, that, when we first set off in the morning, the instant it had its head at liberty, it almost invariably com

* The person drawn is strapped to the pulk. † p. 494.

menced a full gallop, the rest all following at a similar pace, as if moved by one common impulse. This was kept up by them as long as they remained unexhausted, the driver having little power to stop the animal, from the rein being merely attached in the manner it is to the head. The eagerness of the deer to set off is frequently followed by ludicrous scenes, the driver being often placed in an awkward situation, if he be inattentive, and do not happen to have the rein in his hand at the moment." *

The obstinacy which the rein-deer sometimes displays is the preservation of his driver. The great difficulty is to separate him from his companions, or to prevent him joining the herds which he sees upon his track. This gregarious disposition is given him for his protection against the danger of a solitary state, and the Laplander avails himself of it when he loses his road, or is separated from those with whom he travels.

"In proceeding along the extensive and endless lakes of Lapland, if the number of deer be great, a close and lengthened procession is invariably formed; each deer following the foremost sledge so closely that the head of the animal is generally in contact with the shoulders of the driver before. Should the guide alter his direction, by making a bend to the right or left, the whole of the deer in the rear will continue their course, till they arrive at the spot where the turn was made. It thus frequently happens, that, when the distance between the foremost and hindmost deer is great, the guide making a bend, considerable saving might be obtained by cutting across. This, however, it is scarcely possible to do; for should the deer even be pulled by main force out of its former course, it will immediately turn aside from the new direction it is placed in, and

* De Broke, p. 508.

regain the old track, in spite of all the driver can do to prevent it. It is useless to contend with the animal; and the time thus lost might leave the driver at such a distance from the rest of the party as to render it a matter of some difficulty to overtake them. This unwillingness to separate from its companions is one feature of the instinct given to this animal; and it is the very circumstance that, more than any other, ensures the safety of the traveller. Should any accident separate him from the rest of his party, the deer be fatigued, or other occurrences throw him considerably in the rear, if he trust entirely to his deer, it will enable him to overtake the rest though they should be some miles in advance, from the exquisite olfactory sense it possesses. The animal, in this case, holding its head close to the snow, keeps frequently smelling, as a dog would do to scent the footsteps of its master; and is thus enabled to follow with certainty the track the other deer have gone. Were it not for this property of the animal, travelling across Lapland would be not a little hazardous, particularly in those parts where the weather is the darkest, which is generally while crossing the mountains of Finmark. It often happens that the party is unavoidably scattered, and the sound of the bell enables them to rejoin each other. The bells, however, should the weather be very thick and stormy, can only be heard a short distance off; and it is then by the sagacity of the deer alone that the difficulty is surmounted." *

The mode of hunting the wild rein-deer by tne Laplanders, the Esquimaux, and the Indians of North America, have been accurately described by various travellers. We select the following accounts from the interesting narratives of Captain Lyon and Captain Franklin. Captain Lyon says:—

* De Broke, p. 462.

"The rein-deer visits the polar regions at the latter end of May or the early part of June, and remains until late in September. On his first arrival he is thin, and his flesh is tasteless, but the short summer is sufficient to fatten him to two or three inches on the haunches. When feeding on the level ground, an Esquimaux makes no attempt to approach him, but should a few rocks be near, the wary hunter feels secure of his prey. Behind one of these he cautiously creeps, and having laid himself very close, with his bow and arrow before him, imitates the bellow of the deer when calling to each other. Sometimes, for more complete deception, the hunter wears his deer-skin coat and hood so drawn over his head, as to resemble, in a great measure, the unsuspecting animals he is enticing. Though the bellow proves a considerable attraction, yet if a man has great patience he may do without it, and may be equally certain that his prey will ultimately come to examine him; the rein-deer being an inquisitive animal, and at the same time so silly, that if he sees any suspicious object which is not actually chasing him, he will gradually, and after many caperings, and forming repeated circles, approach nearer and nearer to it. The Esquimaux rarely shoot until the creature is within twelve paces, and I have frequently been told of their being killed at a much shorter distance. It is to be observed that the hunters never appear openly, but employ stratagem for their purpose; thus, by patience and ingenuity, rendering their rudely-formed bows, and still worse arrows, as effective as the rifles of Europeans. When two men hunt in company, they sometimes purposely show themselves to the deer, and when his attention is fully engaged, walk slowly away from him, one before the other. The deer follows, and when the hunters arrive near a stone, the foremost drops behind it and prepares

his bow, while his companion continues walking steadily forward. This latter, the deer still follows unsuspectingly, and thus passes near the concealed man, who takes a deliberate aim and kills the animal. When the deer assemble in herds, there are particular passes which they invariably take, and on being driven to them are killed by arrows by the men, while the women with shouts drive them to the water. Here they swim with the ease and activity of water-dogs, the people in kayaks chasing and easily spearing them; the carcasses float, and the hunter then presses forward and kills as many as he finds in his track. No springs or traps are used in the capture of these animals, as is practised to the southward, in consequence of the total absence of standing wood." *

Captain Franklin describes the mode in which the Dog-rib Indians kill the rein-deer, which he had from Mr. Wentzel, who resided long amongst that people :—

"The hunters go in pairs, the foremost man carrying in one hand the horns and part of the skin of the head of a deer, and in the other a small bundle of twigs, against which he, from time to time, rubs the horns, imitating the gestures peculiar to the animal. His comrade follows, treading exactly in his footsteps and holding the guns of both in a horizontal position, so that the muzzles project under the arms of him who carries the head. Both hunters have a fillet of white skin round their foreheads, and the latter also has a strip of the same round his wrists. They approach the herd by degrees, raising their legs very slowly, but setting them down somewhat suddenly, after the manner of a deer, and always taking care to lift their right or left feet simultaneously. If any of the herd leave off feeding to gaze upon this extraordinary phenomenon, it instantly stops, and the head

* Private Journal.

begins to play its part by licking its shoulders, and performing other necessary movements. In this way the hunters attain the very centre of the herd without exciting suspicion, and have leisure to single out the fattest. The hindmost man then pushes forward his comrade's gun, the head is dropped, and they both fire nearly at the same instant. The deer scamper off, the hunters trot after them : in a short time the poor animals halt, to ascertain the cause of their terror ; their foes stop at the same moment, and having loaded as they ran, greet the gazers with a second fatal discharge. The consternation of the deer increases ; they run to and fro in the utmost confusion ; and sometimes a great part of the herd is destroyed within the space of a few hundred yards."

In a country which affords such an uncertain supply of food, and whose climate is so severe, through a great part of the year, as Lapland, the progress of civilisation can never be very considerable. The people must of necessity lead a wandering life, uniting the hunting and the pastoral character ; but incapable, from physical causes, of pursuing the arts of agriculture, or entering largely into the communications of commerce. But what civilisation exists, or may exist amongst them, is wholly to be ascribed to their best possession—the rein-deer. It is not, therefore, incompatible with the great arrangements by which the universe has been created, and is supported, to believe that the rein-deer has been specially bestowed upon the inhabitants of the polar regions, as an improvement of their necessary lot, in the same way that the locality of the camel has been fixed in the sandy and stony deserts of Asia and Africa. The poor Laplander knows the value of the faithful creature which affords him food, clothing, and the means of transport ; and he offers his homage of thanksgiving to the Great Author of nature, who has given

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